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LEE'S
THEORY AND PRACTICE OF MIDWIFERY.

PUBLISHED QUARTERLY, AT $5 PER ANNUM,
Payable in Advance.

PHILADELPHIA:
BARRINGTON & HASWELL.
BOSTON—OTIS, BROADERS
harleston, S.C.—Wm. H. Berrett : *Richmond, Va.*-
ng, Va.—John J. Haswell : *New York*—C. S. Fra
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LECTURES

ON THE

THEORY AND PRACTICE

OF

MIDWIFERY.

DELIVERED IN THE THEATRE OF ST. GEORGE'S HOSPITAL.

BY

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BRITISH LYING-IN HOSPITAL;
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These Lectures on Midwifery were delivered at St. George's Hospital, and reported in the *London Medical Gazette* during 1842–43. They have been revised and reprinted in accordance with a desire strongly expressed by many students and practitioners to possess them in a separate form.

ROBERT LEE.

4, Saville Row:
January, 1844.

The present edition of Dr. Lee's Lectures is, in every particular, identical with the English, as announced in the above "*Advertisement*," except in the Index, which is considerably enlarged.

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LECTURES
ON THE
THEORY AND PRACTICE OF MIDWIFERY.

LECTURE I.

INTRODUCTION.

There are many diseases peculiar to women; they are all exposed to great suffering and danger during pregnancy and child-bearing, and many die from the acute disorders which follow delivery. Not only are the functions of the uterine system before conception often disturbed, but all the different parts of this system undergo morbid alterations of structure, which are frequently of a malignant nature, and excite, in their progress towards a fatal termination, the most acute and protracted pain.

During the whole period of pregnancy women are exposed to numerous accidents and diseases which endanger life; but it is in labour that they incur the greatest hazard, and endure the most intense suffering. The contents of the gravid uterus are expelled by a process which displays, in every stage, the most skilful contrivance, and in a great proportion of cases it is completed with safety both to the mother and child by the unassisted powers of nature. As soon as labour has commenced, the orifice of the uterus begins to open, that the child may pass through it, and the upper part contracts at intervals, with an amazing degree of regularity and force, till the whole ovum has escaped, and the great arteries and veins exposed by the separation of the placenta are effectually closed.

But this, like all the other functions of the animal body, is liable, from various causes, to great and sudden disturbance, or complete interruption. The uterus may not possess the requisite power to expel the child; or, having done so, and the placenta also, its nervous energy may be insufficient to secure the permanent contraction of its walls, and blood may flow into the cavity till it is distended, and death take place before any apprehension of danger has been roused. Or the head of the child may be so large, or the pelvis of the mother so small or distorted, that it is impossible for delivery to take place, and the uterus and vagina be destroyed by the long-continued pressure they sustain; or lacerated, and the child forced through the rent into the peritoneal cavity. In other cases labour is rendered difficult and dangerous by the unfavourable position of the child within the uterus: instead of the head presenting, or coming foremost, an arm descends, and the body of the child is placed across the pelvis, so that the longer and more forcibly the uterus contracts upon it, the more firmly are the shoulder and thorax impacted in the pelvis, and the more difficult does the operation of turning become.

The placenta, which usually adheres to the upper part of the uterus, is sometimes attached to the cervix or lower part, and then a dangerous flooding ensues, which nature has no power to arrest. The means she usually employs for the suppression of uterine hemorrhage, if exerted in this case, would only aggravate the evil; and if artificial delivery were not performed, death would inevitably follow. The same is the consequence when the placenta has been detached from the upper part of the uterus, and where hemorrhage follows the birth of the child; and not less destructive are the effects produced by the retention of the whole, or portions, of the after-birth in the uterus.

There are many other varieties of difficult and complicated labour, in which the unaided powers of nature are insufficient for the completion of delivery, and where the most prompt and energetic and well-directed treatment is required to avert the danger. Even after the most easy and natural labours, when none of these accidents have occurred, and when all danger is apparently at an end, how often does inflammation of the uterus unexpectedly supervene, and run its course with a rapidity and violence equal to that of plague and cholera.

That such occurrences are not uncommon, the Reports of public institutions in different countries afford too abundant proof. 219,333 women were delivered in the kingdom of Wurtemberg from the year 1821 to 1825, of whom there died 1248, or one in 175. At Hamburg, 5·57 women died in 1000 who have been pregnant or delivered. Of 448,356 females who died in the Prussian States, in the course of fifteen years, between the ages of fourteen and forty-five, 70,215, or nearly one-sixth, died either immediately in the act of delivery or in child-bed; and of 108 of the infants born, 1 in 108 cost the mother her life. In the mortality table for the city of New York for a period of thirty-two years, viz., from 1805 to 1836, both inclusive, it is stated that the births during this period ranged from 200,000 to 300,000; and that the whole number of deaths from child-bed were only 1038. In the Dublin Lying-in Hospital, from the 8th day of December, 1757, to the 31st day of December, 1832, there were 132,979 women delivered, of whom 1488 died. Of 16,654 women delivered in the same institution during a period of seven years, commencing November 1826, there were 1956 difficult cases, and of these 164 proved fatal. There were 409 preternatural presentations; 24 cases of uterine hemorrhage before the birth of the child, and 64 between the expulsion of the child and placenta; 66 of retention of the placenta; 30 of puerperal convulsions; 240 of twins, and 4 of triplets; 97 of prolapsus of the funis; and 88 of puerperal fever, 56 of which were fatal. In the British Lying-in Hospital, Brownlow Street, 33,627 women were delivered between the years 1749 and 1824, of whom 433 died: in the first ten years 1 in 42; in the second ten years 1 in 50; in the third ten years 1 in 53; in the fourth ten years 1 in 60; in the fifth ten years 1 in 288; in the sixth ten years 1 in 231; in the seventh ten years 1 woman in 274. During the last fifteen years, in public institutions and in private practice, I have seen 55 cases of difficult and protracted labour, in which recourse was had to the forceps; above 100 in which delivery was effected by the operation of craniotomy, distortion of the pelvis being the most common cause of the difficulty; 35 in which premature labour was induced; 62 cases of arm presentation; 36 in which the placenta was adherent to the neck of the uterus, and 38 in which it was detached from the fundus and produced dangerous hemorrhage; 7 fatal cases of retention of the placenta, and 19 in which great difficulty and danger were produced by portions of the placenta, or the entire mass, being left within the uterus beyond the usual period; 46 labours complicated with puerperal convulsions, and upwards of 200 of puerperal fever, or inflammation of the uterine organs in the puerperal state. Written histories having been preserved of these cases, they have now been collected and arranged for publication, in the hope that they may be found to illustrate, confirm, or correct, the rules laid down by systematic writers for the treatment of difficult labours, and supply that course of clinical instruction in midwifery, the want of which has been so often experienced by practitioners at the commencement of their career.

When women are attacked with puerperal convulsions, or flooding, or when any of the accidents occur during labour which have now been mentioned, they are wholly unable to make any effort to save themselves, and are placed in the same unconscious and helpless condition as those who have apoplexy or concussion of the brain, or who are suffering from a violent external injury, or extensive wound, with great loss of blood. In no country in the world are women left to die in such circumstances without help; and in the most remote and barbarous ages, means, however rude and imperfect, have always been employed during the sufferings and dangers of child-bearing.

At first, females were solely employed for this purpose. The descendants of Abraham, while a wandering tribe, had midwives, and the Israelites continued to employ them while they remained in Egypt; and it is probable all the surrounding nations did the same, as they now do everywhere in the east. At what period, and in what country, physicians and surgeons were first consulted in cases of difficult labour, and in the diseases peculiar to females, is not known; but it is certain they were so in Greece at the time of Hippocrates, and that great attention was then given to all the different branches of midwifery. His works contain an account of many facts respecting the functions and diseases of the unimpregnated and gravid uterus, and difficult labours, which are evidently derived from extensive observation. He has described accurately the phenomena of menstruation, and traced the connection which exists between the morbid states of this function and hysteria, sterility, leucorrhœa, fibrous tumours of the uterus, and cancer. When the uterus is hard, and is low down near the pudenda, and the groins are indurated, and there is a sense of ardor, and sanguineous and fœtid discharge, he says cancer may be suspected. The following passage proves that he was well acquainted with the condition of the os uteri when affected with scirrhus, and that he was accustomed to examine the uterus by the vagina, in the same manner that we now do to discover its organic diseases. "Si uteri in callum indurescant tum menses occultantur, tum eorum os connivet, neque concepit et aliud quid esse videtur. Quod si attigeris, tanquam saxum illic esse videtur, os asperum est et multas habet radices, non læve aspectu, neque digitum admittit." (p. 658.)

Some of the most important facts respecting the structure and functions of the human ovum had been ascertained at this early period, and particularly that the respiration and nutrition of the fœtus are effected by the placenta and umbilical cord. Hippocrates had an opportunity of examining a perfect ovum expelled about a month after conception, instead of six days, as he supposed, and it was probably the first entire ovum that he had ever seen, and I believe it was the first that ever was described. The feelings of admiration excited in his mind on first beholding it, have, doubtless, since been experienced in an equal degree by the great anatomists "who have toiled in the mysterious researches of generation." "Quam illa videns non sine admiratione spectavit, ego vere qualis referam. Ut si quis ovo crudo-externam testam undique auferat in quo interiore membrana contentus humor pelluceat, ad hunc fere modum (ut uno verbo dicam) se habebat liquor ille, praetereaque ruber erat et rotundus. Conspiciebantur autem fibrae albæ et tenues in membrana cum sanie crassa et rubra contentæ, et ipsa membrana exteriore parte cruore ad instar sugillatorum suffusa erat. In cujus medio tenue quiddam extabat, quod mihi umbilicus esse videbatur et per illum primum respirasse, ex eoque protendebatur membrana tota genituram complectens." (p. 236.)

In this concise description, it is easy to recognize the decidua with its great plexus of veins gorged with maternal blood, the villi and cells of the chorion, the amnion, embryo, umbilical cord, and placenta, of which he has given a more minute account in the latter months of pregnancy, and the functions it performs, and the membranes which surround it. The only parts of the human ovum to which there is no allusion here made, are the vesicula umbilicalis, which was first described by Albinus and Wrisberg, about the middle of the last century, and the decidual cavity, discovered by Dr. William Hunter, a few years after.

The works of Hippocrates likewise contain some important information respecting the diseases of pregnant women, particularly abortion, and the causes and symptoms of the death of the fœtus in utero. Blows, falls, violent terror, rupturing the membranes, diseases of the parents, are considered by him to be the principal causes of the premature expulsion of the ovum. When the child is dead, he says, there is a sense of coldness in the abdomen, and it subsides, and the child falls like a stone within the uterus from side to side when the mother turns, and there is flaccidity of the breasts. If the menses appear during pregnancy, abortion follows, and the fœtus is expelled in a diseased condition. If much blood be discharged during labour, without pain, there is danger that the child will be dead, or possess little vitality. Pregnant women affected with headache, sopor, and weight of the head, he adds, are liable to be attacked with convulsions.

In difficult labours, where the head presented and could not be expelled by the natural efforts, it is probable that in the greater number of cases, after employing various remedies without effect, that he opened the head and extracted it with a hook or crotchet, as we do at the present time. If the fœtus lay across, presenting to the os uteri, whether it be alive or dead, he orders it to be pushed back and turned, so as that it may present with the head in the natural position; and to accomplish this purpose the woman must be laid in bed with the nates raised higher than the head. If the child be alive, and presents with the arm or foot, he directs us to return them as soon as possible, and bring down the head; or if it lies across, presenting with the side or hip, the same method, he says, must be used.

The operation here described is perfectly impracticable, and I cannot believe that he ever actually succeeded by it in accomplishing delivery where the arm presented, and the fœtus was mature, and the uterus contracting around it. Most of the women with preternatural presentations of the child would have died undelivered had some other method not been adopted, and that method consisted in mutilating the body with the crotchet, and bringing it away piecemeal, as we are sometimes still compelled to do where the operation of turning is unadvisable or impracticable. Hippocrates has compared the fœtus lying across the brim of the pelvis to an olive in a narrow-mouthed jar, which cannot be so easily extracted by the middle as when it presents with one end. But this comparison is both imperfect and incorrect, for the olive has neither head, nor superior nor inferior extremities, like the fœtus, and it is extraordinary that he failed not merely to perceive these points of dissimilarity, but to discover that the feet of the child could readily be seized with the hand, and extracted, while it was impossible for the hand to grasp the head on account of its bulk. The slightest reflection on what he must have often seen take place in presentations of the feet and nates, one might suppose would have led to this discovery, which comprehends the whole principle of the operation of turning; a discovery which will ever be regarded as one of the most important in midwifery, and which has gained for its author the most lasting honour. That a circumstance of such vast importance, and now apparently so obvious, should not only have escaped the observation of Hippocrates, but of all who followed him for 2000 years, is truly a matter of the deepest astonishment, and seems to illustrate, in a striking manner, what Dr. William Hunter has said respecting the discovery of the circulation of the blood. "It is the more amazing that this discovery was left for Harvey, when we consider that he was near a hundred years after Vesalius, in which interval many great men had appeared, and anatomical schools had flourished in many different parts of Europe. And what is still more astonishing, Servetus first, and Columbus afterwards, both in the time of Vesalius, had clearly given the circulation of the blood through the lungs, which we may reckon at least three-quarters of the discovery: and Cæsalpinus had, many years before Harvey, published in three different works all that was wanting in Servetus to make the circulation quite complete. But Providence meant to reserve this honour for Harvey, and would not let men see what was before them, nor understand what they read."

Midwifery remained nearly in the same condition in which it was left by Hippocrates till the middle of the sixteenth century, when lying-in wards were opened at Paris in the Hôtel Dieu, and opportunities were afforded of witnessing all the phenomena of natural and difficult labour, and the diseases of puerperal women. The great discovery to which I have now alluded was then made by Ambrose Paré, and described in the following passage in the 15th chapter of his translated works, 1665. "It is supposed to be a natural and easy birth when the infant cometh forth with his head forwards, presently following the flush of waters, and it is more difficult when the infant cometh forth with the feet forwards; all the other waies are most difficult; therefore midwives are to be admonished that as often as they perceive the child to be coming forth none of these waies, but either with his belly, his back forwards, as it were doubled, or else with his hands and feet together, or with his head forwards and one of his hands stretched out, that they should turn it and draw it out by the feet; for the doing whereof, if they be not sufficient, let them crave the assistance and help of some expert chirurgian." The method the surgeon ought to adopt is described more particularly in Chap. XXVI. which is headed, "Of the Chirurgical

Extractions of the Child from the Womb either Dead or Alive;" and it is obvious from the following passage that he had met with cases of arm presentation in which the feet could not be brought down, and the turning accomplished, till the arm was removed, and not then. "But if the infant lyeth as if he would come with his hands forwards, or if his hands be forth already, so that it may seem he may be drawn forth easily that way, yet it must not be so done, for so his head would double backwards over his shoulders, to the great danger of his mother. Once I was called unto the birth of an infant whom the midwives assayed to draw out by the arm, so that the arm had been so long forth that it was gangrenate, whereby the child died. I told them presently that his arm must be put in again, and he must be turned otherwise. But when it could not be put back by reason of the great swelling thereof, and also of the mother's genitals, I determined to cut it off with an incision knife, cutting the muscle as near as I could to the shoulder, yet drawing the flesh upwards, that when I had torn off the bone with a pair of cutting pincers it might come down again to cover the shivered end of the bone, lest otherwise, when it was thrust in again into the womb, it might hurt the mother; which being done, I turned him with his feet forwards, and drew him out as is before said. But if the tumour, either naturally or by some accident, that is to say, by putrefaction, which may perchance come, be so great that he cannōt be turned according to the surgeon's intentions, nor be drawn out according as he lieth, the tumour must be diminished, and he must be drawn out as aforesaid, and that must be done at once." Except some judicious observations on the treatment of retention of the placenta, there is nothing besides, relating to midwifery, of the slightest importance in the works of Ambrose Paré. Although he had enjoyed frequent opportunities of examining the gravid uterus in those who had died during pregnancy, and had repeatedly performed the Cæsarean operation on the living body, he never became acquainted with the ordinary position of the fœtus in utero, but considered it altogether uncertain and variable, both in living and dead women. This fact, indeed, was not known to many for a hundred years after this period, and the fœtus is consequently represented by figures, in their works, in the most grotesque and unnatural attitudes — as if flying, jumping, walking erect, kneeling, and swimming; in every position, indeed, except that in which it is placed by nature.

In 1609, about thirty-six years after Paré, his pupil, Guillemeau, published a work entitled, "De l'Heureux Accouchement des femmes où il est traicte du gouvernement de leur grossesse, De leur travail naturel et contre nature, Du traictement estant accouchées, et de leurs maladies." He has described the symptoms and treatment of natural labour with the greatest fidelity, and the management of new-born children and women in the puerperal state. He recommends a broad bandage to be applied around the body at the commencement of labour, and to be gradually tightened as it proceeds, and also a permanent binder, as is done at the present time, when the whole process is finished. Where the placenta did not immediately follow the child, he made pressure with the hand over the fundus uteri to excite the contractions, and employed all the means now in common use to promote its expulsion. The immediate extraction of the placenta after the birth of the child became, however, in no long time, almost the general practice, and continued to be so till about the middle, or near the end, of the eighteenth century, when Dr. W. Hunter made the unfortunate experiment of leaving it wholly to nature.

Respecting the diseases of pregnant and puerperal women, there is nothing of any great value in the work of Guillemeau: its importance is derived from the history it contains of difficult labours, which is far more accurate and complete than any that had ever before appeared, and in which he has embodied the results of all the observations he had made during a period exceeding forty years. "When a surgeon is called to a case of difficult labour, he should first inquire into the cause of the difficulty, and all the causes," he observes, "may be referred to four heads — 1, to the mother; 2, to the infant; 3, to those things that are connected with the infant; and, 4, to external circumstances." Proceeding upon this principle of classification, similar in many respects to that adopted by Dr. Merriman in his excellent practical work on Difficult Parturition, he arranges all the varieties of laborious and difficult delivery, and describes their treatment under the following sixteen orders: —

1. Of the means of assisting women who have difficult labours.
2. Of the different labours which are accomplished by manual operation.
3. Of labours with hemorrhage and convulsions, and their treatment.
4. The means of affording relief when the afterbirth presents the first.
5. The delivery of dead children, and when they are swollen or distended within the uterus.
6. Cases of malposition of the head.
7. Presentation of the superior extremities.
8. Of the head and the two arms together.
9. Of the feet.
10. Of the feet and hands together.
11. Treatment of cases in which the infant comes double, or the back, loins, sides, shoulders, or nates present.
12. Presentations of the thorax and abdomen.
13. Cases of twins, one with the head presenting, the other the feet.
14. Twins, the feet of both presenting.
15. Retention of the placenta.
16. On the Cæsarean section, which he condemns after seeing it unsuccessfully performed five times.

We have here not only all the great operations of midwifery then known minutely and accurately described, but we have the important pathological fact first clearly stated, that the placenta may present or come before the child; that this gives rise to a dangerous hemorrhage, which nature is unable to suppress; and that the most safe and expedient means of arresting it is to deliver immediately by passing the hand into the uterus and bringing down the feet. He has made no observation from which it can be justly inferred that he believed the placenta to have been originally adherent to the upper part of the uterus, and to have descended from thence to the cervix. This is an erroneous hypothetical opinion which was first adopted by Daventer at a much later period, and which has been also attributed unjustly to Hippocrates, although he had formed no theory on the subject, having merely asserted that the placenta should come after the child, for the child cannot live if it comes first, because the child derives its life from the afterbirth, as a plant does from the earth. Portal was the first, in 1685, who stated that the placenta was found, not merely at the cervix uteri, but adhering to it all around. In the account of his sixty-ninth case, he says: "Je sentis l'arriere-faix qui se présentoit, et qui estoit fort adherant, et attaché à l'orifice de la matrice de toutes parts." In the histories of all the other cases the circumstance is expressly stated, and the same treatment is recommended as that employed by Guillemeau, and which has continued to be the practice in common use to the present time.

In cases of hemorrhage where the placenta did not present, but had been detached from the fundus uteri, Guillemeau likewise had recourse to artificial delivery; and for the knowledge of this practice he most candidly and honourably states that he was indebted to Ambrose Paré. His love of truth and of justice was such, that he would not claim an honour which belonged to another, though Paré had been dead for many years, and had made no mention of the discovery in his works.

Mauriceau and Smellie are the only individuals who have devoted their lives to the study and practice of midwifery during the last two hundred and thirty years, whose contributions to the science, in point of originality and importance, can be compared with those of Guillemeau. Mauriceau practised midwifery forty years in Paris, and he considered no department of medicine or surgery superior to it in dignity and utility. For twenty-five years he preserved faithful histories of all the important cases which came under his care, and out of three thousand he selected seven hundred of the most important for publication. "Among these cases," he observes, "will be found examples both to imitate and avoid; and since I have had the public good alone in view in relating them, I have recorded the unfortunate as well as the fortunate results of my practice, and have omitted nothing which long experience has taught me might in any way contribute to the health and relief of women in pregnancy and in child-bed, and to the cure of the diseases to which they are at all times exposed."

Mauriceau has recorded the histories of thirty-seven cases of uterine hemorrhage in which the placenta did not present, but had originally adhered to the upper part of the uterus, and been afterwards detached. Twenty-one of these cases occurred before 1682; and in most of them he delivered artificially by turning the child, as he had done in the sixteen cases of placental presentation which he has likewise recorded, and as Paré and Guillemeau were accustomed to do in all cases of flooding in the latter months of pregnancy. On the 9th of June, 1682, he says, "I delivered a young woman in the eighth month of pregnancy, who had uterine hemorrhage caused by a violent fall upon the knees four days before. During her whole labour she had only slight pains in the abdomen, which produced no effect. As the hemorrhage was moderate, and the uterus was gradually dilating, I committed the labour to nature, contenting myself with rupturing the membranes of the child." There is no account given of the circumstances which led him to make this important change in the treatment of cases in which the placenta did not present, and to adopt that improved method of treatment which was, at a later period, so strongly recommended by Puzos, and considered by him as his own discovery. No fact of the slightest importance has since been discovered respecting the causes and treatment of uterine hemorrhage in the latter months of pregnancy; and to Mauriceau the honour is due of having first pointed out the efficacy of rupturing the membranes where the placenta does not present.

The midwifery forceps, which enables us to save the lives of some children, which we would otherwise be compelled to sacrifice, was invented by Chamberlayne early in the seventeenth century; some years, probably, before the publication of Mauriceau's great systematic work in 1668. But no description was given of the instrument before 1733, and no precise rules laid down for its use. Chapman then stated that it could never be employed with advantage till the os uteri was dilated, and the head had descended into the pelvis. Smellie, soon after, having ascertained with greater precision the manner in which the fœtal head passes through the pelvis, was enabled to lay down still more precise rules for its application. Although Smellie's works contain many cautions against the abuse of the forceps, there nevertheless sprung up, soon after their publication, both in this country and on the continent of Europe, a singular want of confidence in the powers of nature, and a mischievous predilection for the employment of instruments in the practice of midwifery. The process of labour, instead of being regarded as a vital process, depending on nervous energy and muscular contraction, came to be considered as a function purely mechanical. "The whole art of midwifery," observes a learned professor, "is founded on geometrical principles; it is certain in all its operations, like the laws of motion, and might be reduced to the following simple problem in mechanics: — an extensible cavity of a certain capacity being given, to draw through it a flexible body of a given length and breadth, by an opening dilatable to a certain extent." "Parturition is a problem in mechanics," another exclaims: "a body is to be put in motion, a moving power is given, and there is a resistance to be overcome. Whenever the relation in which each of these three points of the problem stand to one another is in such a ratio that no movement or motion can be produced, the labour is at a stand." This application of mechanical principles to the practice of midwifery has been greatly promoted by the writings of Solayrés, Baudelocque, Gardien, Capuron, and many other continental, and some English and American, authors during the last forty years. The result of this has been, that in some public institutions there have been 300 forceps cases in 2,093 labours, or 1 in 7; and in others 1 in 14, 1 in 16, and 1 in 31 labours. From these facts it seems not very improbable that the time might actually arrive when no woman would be allowed to be delivered by the natural efforts; which another learned professor is said to have expressed a hope he would live to see. Dr. William Hunter had great confidence in the powers of nature, and inculcated in his lectures, with the happiest effect, the propriety of trusting much, in all cases, to their unassisted efforts, and of employing instruments only where absolutely necessary. He thus powerfully contributed to correct the evil I have now described, and which had prevailed also to a great extent in England. The writings of Drs. Osborn and Denman likewise assisted; and those of the latter contain by far the best account we yet possess, not only of the forceps, but of the operation of turning, craniotomy, and the induction of premature labour, which was first proposed by Dr. Macaulay in 1756.

During the present century many subjects relating to the structure, and functions, and diseases of the uterine system, at the different periods of life, which had remained for ages involved in the greatest obscurity, have been successfully explored. Of these perhaps the most interesting are the researches which have been made into the structure of the human ovum before impregnation, and into the condition of the ovaria during menstruation and after conception; the circulation of blood in the human ovum during the early months; the pathology of the ovum at the different periods of pregnancy; and the causes of the death of the fœtus, and its premature expulsion from the uterus. To these may be added the investigations which have been made into the structure of the various tumours of the uterus which are not of a malignant nature, and those which are cancerous. The nature of several puerperal diseases has likewise been determined by morbid anatomy during this period, and the diagnosis of pregnancy has been greatly improved by the employment of auscultation.

Perhaps I may be permitted on this occasion to allude to some labours on the nervous system of the uterus, which were commenced four years since, and which have now been brought to a successful termination. Dr. W. Hunter was the first who distinctly traced the great sympathetic and sacral nerves into the uterus, and suspected that the nerves enlarge during pregnancy. As he never examined the nerves of the unimpregnated uterus, and saw the nerves of the gravid uterus dissected only in one subject, he could not positively assert that they increased after conception. "I cannot," he observes, "take upon me to say what change happens to the system of uterine nerves from utero-gestation, but I suspect them to be enlarged in proportion as the vessels."*

Mr. John Hunter denied that the nerves of the uterus ever enlarged during pregnancy in the smallest degree. "The uterus in the time of pregnancy," he says, "increases in substance and size probably fifty times beyond what it naturally is, and yet we find that the nerves of this part are not in the smallest degree increased. This shows that the brain and nerves have nothing to do with the actions of a part, while the vessels which are evident increase in proportion to the increased size: if the same had taken place with the nerves, we should have reasoned from analogy." Dr. W. Hunter left no dissected preparation of the nerves of the uterus, nor did Mr. John Hunter, to support their conflicting statements; and in 1838 there were no preparations of the nerves of the human unimpregnated or gravid uterus, nor of the uterus of any of the lower animals, in this country. In 1822, Tiedemann published a description of the nerves of the uterus, with two plates, in which only a few small branches of nerves from the great sympathetic were represented, accompanying the uterine arteries upon the sides of the lower part of the uterus. The fundus uteri, which is possessed of the greatest degree of contractile power, is, you see, quite destitute of nerves. In 1823, Lobstein stated that the uterus both before and after conception is very sparingly supplied with nerves; and in 1829, Professor Osiander declared that the nerves of the human uterus had never been seen, either by himself or by any other anatomist, and that he could only assert, as Galen had done, from the irritability of the uterus, that it did possess nerves.

In the last volume of the Philosophical Transactions, there is a paper on the Nervous Ganglia of the Uterus, in which it is stated, from dissections of the unimpregnated uterus, and of the gravid uterus in the third, fourth, sixth, seventh, and ninth months of pregnancy, that there are many large ganglia formed on the uterine nerves, and on those of the vagina and bladder, which enlarge with the coats, bloodvessels, and absorbents of the uterus during pregnancy, and which return after parturition to their original condition before conception takes place. In the two engravings which accompanied the paper are represented these ganglia and nerves of the uterus, vagina, and bladder, in the fourth month of pregnancy. But these constitute but a small portion of the nervous system of the human uterus; and the forthcoming volume of the Philosophical Transactions will contain a further account of the nervous structures of that organ, with the engraving I now show you. In this plate have been accurately represented all the great bloodvessels and nerves of the gravid uterus, on the left side, at the end of the ninth month of pregnancy. About an inch above the origin of the mesenteric artery each cord of the great sympathetic nerves ends numerous branches which form a plexus around the trunk of the artery, which accompany the ramifications of the vessel, and particularly the hemorrhoidal artery, to the rectum. The two cords of the great sympathetic, after giving off these nerves, pass down before the aorta, about two inches below its bifurcation, where they separate, the left passing down behind the hypogastric bloodvessels to the side of the neck of the uterus, and terminating in what has been called the left utero-cervical or hypogastric ganglion. This, you see, is a very great ganglion, and covers a large part of the cervix uteri, and gives origin to the nerves of the vagina and bladder, and many of the rectum. All the bloodvessels of this ganglion have been injected, and an artery passes up from it, with a plexus of nerves, along the whole body of the uterus to the principal trunk of the spermatic vein, close to the ovarium, and there terminates in another ganglion, nearly equal in size to the utero-cervical ganglion. From this spermatic ganglion the fundus uteri is supplied with nerves, and the spermatic nerves are sent off, and which pass up with the spermatic artery and vein to the renal plexus. Besides these ganglia, there are others of great size situated immediately beneath the peritoneum, between which and the spermatic and hypogastric ganglia numerous large plexuses of nerves, accompanied with arteries, pass. But what you see represented in this engraving is only the fourth part of the ganglia and nerves of the gravid uterus at the full period; and if it were asserted that these nervous structures bear to the uterus nearly the same proportion that the optic nerve and retina do to the eye, it is probable there would be little exaggeration of the truth. It is chiefly by the influence of these nerves that the uterus performs the varied functions of menstruation, conception, and parturition; and it is solely by their means that the whole fabric of the nervous system sympathises with the different morbid affections of the uterus. If these nerves of the uterus could not be demonstrated to exist — if, as Mr. Hunter asserted, the nerves of the uterus were not enlarged in the smallest degree during pregnancy, and that the brain and nervous system had nothing to do with the actions of the uterus — its physiology and pathology would be completely inexplicable.

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* In *Corrigendum* at the end of the volume, Dr. Lee admits, after his attention had been called to Dr. Hunter's own words, by a learned and ingenious friend, that he had misunderstood altogether the meaning of the passage in the writings of this distinguished teacher; in supposing that Dr. Hunter had examined the nerves of the gravid uterus, when he referred merely to a dissection of the nerves of the unimpregnated uterus. Dr. Hunter's language, on the occasion, is as follows: — "I cannot take upon me to say what change happens to the system of uterine nerves from utero-gestation, but I suspect them to be enlarged in some proportion as the vessels are. Upon this occasion we profess only to give the anatomy of the gravid uterus; yet since the descriptions of the nerves *of the uterus which I have read seem to me unsatisfactory, I shall so far go beyond my subject as to describe the hypogastric nerves, such as they appeared to me in a female subject carefully dissected for that purpose.*"

In all civilised countries midwifery is taught in the medical schools, and the propriety of employing physicians and surgeons in its practice is generally acknowledged. No apology, therefore, can now be required in behalf of a branch of medical science so eminently conducive to the best interests of society, and a knowledge of which is essentially necessary not only to accoucheurs but to all who are engaged in the practice of medicine and surgery.

In this course of lectures I shall endeavour to communicate to you a full account of all that is at present known respecting the structure, functions, and diseases of the uterine system, at the different periods of life, and prepare you for the discharge of those duties which will hereafter devolve upon you as practitioners of midwifery. It is a grievous error to suppose that a knowledge of midwifery is to be acquired more easily than a knowledge of any of the other branches of medicine. If you would excel in it, equal, perhaps greater, exertion will be necessary. "Excellence," as Sir J. Reynolds has observed, in his address to the students of the Fine Arts, at the Royal Academy, "is never granted to man but as the reward of labour. It argues, indeed, no small strength of mind to persevere in habits of industry, without the pleasure of perceiving those advances, which, like the hands of a clock, whilst they make hourly approaches to their point, yet proceed so slowly as to escape observation. I need not, therefore, enforce the necessity of continual application. You must have no dependence on your own genius. If you have great talents, industry will improve them. If you have but moderate abilities, industry will supply their deficiency. Nothing is denied to well-directed labour; nothing is to be obtained without it."

LECTURE II.

OF THE BONES, ARTICULATIONS, DIMENSIONS, AND DISEASES OF THE FEMALE PELVIS.

It is necessary to commence with the anatomy and pathology of the female pelvis, as the process of delivery cannot be understood, nor any of the operations of midwifery, as craniotomy, induction of premature labour, and turning, performed, the forceps applied, or the placenta extracted, without a knowledge of the pelvis, both in its healthy and morbid states.

The *pelvis* consists of the ossa innominata, the sacrum, and the coccyx. The sacrum and coccyx form the back part of the pelvis, the ossa innominata its sides and front.

The *sacrum* is of a triangular shape, smooth, and concave on the anterior surface, and convex and irregular behind. Its base or superior surface is about four inches in breadth, and the central part, which is of an oval form, corresponds with the inferior surface of the body of the last lumbar vertebra, to which it is united by an elastic fibro-cartilaginous substance. The anterior part of this substance is thicker than the posterior, so that these bones form a considerable angle anteriorly, which is called the promontory, or great angle of the sacrum. From this on each side the bone expands, and is inclined outwards to the sacro-iliac symphysis. The superior lateral surface is broad and irregular, to articulate with the ilia, and in the recent state is covered with cartilage. The inferior border is thin, and gives attachment to the sacro-sciatic ligaments. The anterior surface of the bone, which is broad at the upper part, and narrow towards the apex, presents four transverse ridges, formed by the ossification of the cartilages which separate the bones of the fœtus. At the ends of these ridges there are four pair of large foramina for the passage of the anterior sacral nerves. Both these sets of foramina communicate with the sacral canal, which is curved like the bone, and is of a triangular form. On the median line, behind the canal, is situated an irregular ridge, formed by the union of four small eminences, which correspond with the spinous processes of the four constituent vertebræ. At the base of the bone there are also two regularly formed oblique processes, to articulate with those of the last lumbar vertebra.

To the apex or inferior extremity of the sacrum is attached the *os coccygis*, which is of a pyramidal form, and in children consists of three or four small spongy bones, the bodies of as many rudimentary vertebræ, the uppermost of which is the largest, and has two cornua or eminences which project posteriorly. The coccyx is flexible, and also moveable backwards upon the sacrum, with which it forms an obtuse angle. There is a thin layer of fibro-cartilage between the contiguous ends of these bones; and this articulation is surrounded with a capsular ligament. An anterior ligament is placed along the front of the sacrum and coccyx, and a posterior ligament behind.

Each *os innominatum*, in young subjects, is divided into three separate bones — the ilium, the os pubis, and the ischium. The *ilium*, which forms the upper and largest part of the bone, is flat, broad, and somewhat triangular in its shape. Its outer surface is convex before and concave posteriorly. The inner surface of the bone, named the internal iliac fossa, is smooth and concave, at the under part of which is the linea innominata, forming the lateral part of the brim of the pelvis. The superior convex border of the ilium forms the crest or spine, which terminates before in the anterior and inferior spinous process. A little below this is situated the anterior and inferior spinous process. The spine of the ilium terminates behind, in the two corresponding posterior spinous processes, below the latter of which is the sacro-sciatic notch. The inferior and outer part of the bone forms the upper and back part of the acetabulum.

The *ossa pubis* are situated at the inner and anterior part of the ossa innominata. The body of each os pubis is placed transversely before the anterior part of the ilium. The upper and inner part of the bone enlarges, and forms the crest or angle, from the outer and fore part of which the spine extends horizontally backwards, to form, with a similar corresponding ridge in the ileum, the linea-ileo-pectinea. The inner part of the os pubis becomes narrower, and runs downwards to join the ramus of the ischium, and forms along with it one side of the arch of the pubes.

The *ischium* forms the inferior portion of the os innominatum and of the acetabulum. The body of the bone sends off the spinous process, which is about half an inch in length, and projects obliquely downwards and backwards, and gives origin to the innermost sacro-sciatic ligament. The lowest portion of the ischium, which is thick and narrow, terminates in the tuberosity, from which, on the inside, the smooth plane proceeds obliquely upward. In the natural situation of the ossa ischii their planes converge to the tuberosities, and this has an influence on the fœtal head in labour as it approaches the outlet of the pelvis.

The obturator, or thyroid foramen, in the anterior part of the pelvis, is formed by the ischium and os pubis.

Articulations of the pelvis. — The bones of the pelvis are united by cartilages and ligaments, and never separate during labour, or at any other time, so long as they continue in a healthy state. The surface of each os pubis is covered at the symphysis with a layer of cartilage, and between these two layers of cartilage an elastic fibrous tissue is interposed, which prevents their separation from one another: the fibres of this substance pass between them transversely. I have only once seen a small cavity between the cartilages covering the bones of the pubes. A strong ligament is stretched across under the symphysis, and the whole articulation is surrounded with ligamentous fibres. The articulating surfaces of the ossa innominata and sacrum are covered with cartilage, and have corresponding elevations and depressions. Each sacro-iliac symphysis is surrounded by strong ligamentous bands, and the sacro-sciatic ligaments assist in preventing a separation of the bones. These ligaments extend from the sacrum and coccyx to the spinous process and tuberosity of the ischium, by which means the sacro-sciatic notch is converted into an oval foramen, through the upper and back part of which the sciatic nerve passes to the lower extremity.

The pelvis is divided into the brim, the cavity, and the outlet.

The *brim*, or superior aperture, is usually of an oval form, to correspond with the shape of the fœtal head. The distance between the base of the sacrum and symphysis pubis is usually about four inches. This is called the conjugate or sacro-pubic, or antero-posterior diameter of the brim. The long or transverse diameter, which crosses this at right angles, extends from ilium to ilium, and usually measures about five inches. The plane of the brim is inclined downward and forward, so as to form a great angle with the spinal column.

The *outlet* of the pelvis is of an irregular quadrangular form, and is not parallel with the brim. A line drawn from the inferior border of the symphysis pubis to the extremity of the coccyx, when the bone is pressed back, measures five inches. This is the longest diameter of the outlet, and it crosses at right angles the long diameter of the brim. Between the tuberosities of the ischia the distance is about four inches.

Behind the symphysis pubis the *cavity* of the pelvis is an inch and a half in depth; it is three inches deep on the sides, and about six from the base of the sacrum to the point of the coccyx. A line drawn through the brim, cavity, and outlet of the pelvis, equally distant at all points from its sides, represents the *axis* of the pelvis. In the living body it is impossible to determine precisely the course of this line, and it is sufficient, in practice, to know that the pelvis is a curved canal, and that whatever passes through it must follow a line corresponding with the curvature of the sacrum. The head of the fœtus is of an oval shape, and it usually measures four inches from the forehead to the occiput, and three between the parietal protuberances. In natural labour the head enters the brim in such a manner that its diameters nearly correspond with those of the pelvis, the ears being near the sacrum and pubes, and the forehead and occiput placed towards the sides of the pelvis. As it descends through the cavity to the outlet, the opposite sides of the head are pressed against the converging planes of the ischia, and the occiput is turned so as to present under the arch of the pubes, and the forehead to press against the perineum and coccyx.

There are various soft parts which connect the uterine organs, bladder, and rectum, with the bones of the pelvis, and diminish their irregularities. The outlet is nearly closed by a septum formed of parts which are chiefly muscular: the levator ani and coccygæi muscles form the superior, and the sphincter ani, transversus perinæi, and constrictor vaginæ, the inferior plane of muscles. The hemorrhoidal and pudic vessels and nerves, with adipose and cellular membrane, also contribute to fill up the inferior aperture of the pelvis. This septum at the outlet of the pelvis is pierced by the urethra, vagina, and rectum, in the mesial plane. An aponeurosis arising from the great sciatic ligament and the inner edge of the arch of the pubes covers the inferior surface of this septum. In the living body the psoæ muscles, with the iliac bloodvessels, extend along the sides of the brim of the pelvis, and modify its form.

In infancy the pelvis is long and narrow, the sacrum slightly curved, and the transverse diameter of the brim is shorter than the sacro-pubic. The form of the brim and outlet of the fœtal pelvis is preserved through the whole course of life in the male. The bones of the male pelvis are stronger and thicker than in the female, the cavity is less capacious, and the pubic arch is smaller.

Diseases of the articulations and bones of the pelvis. — The cartilages interposed between the ossa pubis and the sacrum and ilia may become softened, or be destroyed by inflammation and ulceration, like fibro-cartilage in other parts of the body, and the bones may separate and become moveable on each other. This rarely happens, except in pregnant or puerperal women, and is most frequently one of the remote consequences of inflammation of the veins, absorbents, or muscular coat of the uterus.

Arrest of development. — In some women the pelvis is not developed in the usual manner, and it remains small through life, though not distorted. Its condition is very different from what it is in childhood. When this arrest of development takes place in the pelvis, even though the fœtal head should not be remarkably large, all the evil consequences which usually result from a disproportion between the head and pelvis follow. Mr. Shaw attributes this interrupted growth and defective capacity of the pelvis to rickets: but in the person from whom this striking specimen now exhibited of the disease was obtained, there was no bending of the spine or cylindrical bones of the extremities, or any appearance of rickets in any part of the body. The brim of the pelvis is of an oval form, and measures three inches from the promontory of the sacrum to the symphysis pubis, and four inches and a half in the transverse diameter. The distance between the tuberosities of the ischia is three inches and a quarter. The ossification of the sacrum and ossa innominata is very imperfect. The bones of the extremities were not bent, and there was not the slightest external appearance from which the actual condition of the pelvis could have been known before the labour commenced. It took place on the 22d of April, 1836, and the nates presented and were extracted by a blunt hook passed over one of the groins, when they could not be expelled by the natural efforts. The trunk and upper extremities of the fœtus were drawn through the pelvis without much difficulty, but the head remained long immoveably fixed above the brim: the perforator was passed up to the occiput, and the head opened and extracted with the crotchet; but she died from inflammation of the uterine organs and cellular membrane of the pelvis. Had the state of the pelvis been known, premature labour should have been induced.

Distortion of the pelvis from malacosteon or mollities ossium. —When the bones of the pelvis are affected with this disease, they become so soft that they cannot support the weight of the head, trunk, and upper extremities. The quantity of earthy matter in them is much diminished, and their internal structure is often completely changed. Within a thin bony layer on their surface there is sometimes contained a soft bloody substance of a dark colour. This disease occurs only in adults, and may be confined to the bones of the pelvis, or it may affect at the same time the vertebral column and the long bones both of the upper and lower extremities. In some cases the bones of the extremities have been fractured by the application of a slight external force, or by the actions of the muscles in turning the body round; and as the disease proceeds, the bones of the spine and extremities have become bent, and an extraordinary degree of deformity and shortening has taken place. In one case the trunk of the body, at the time of death, measured only thirty-two inches in length; and in another case, related in Gooch's Surgical Observations, the patient was found to have lost two feet two inches of her natural stature. The brim, cavity, and outlet of the pelvis, are all more or less changed by this disease. The promontory of the sacrum projects usually forward, and encroaches upon the short diameter of the brim. In some cases the symphysis pubis and great angle of the sacrum have been forced within an inch of one another. Sometimes the base of the sacrum is pressed down by the weight above into the cavity of the pelvis, and the last lumbar vertebra comes to occupy its place. The lower end of the sacrum is often also bent upward, and the long diameter of the outlet proportionally diminished. The heads of the thigh-bones press the sides and front of the pelvis inward and backward, towards the sacrum, so that the oval shape of the brim becomes triangular or cordiform. The tuberosities of the ischia are sometimes pressed together, so as to be almost in contact, and the arch of the pubes so contracted that it cannot be said to exist.

When this affection has commenced in the bones of the pelvis, it proceeds with greater or less rapidity till the high degree of distortion is produced which you see in this pelvis, and some of these casts, taken from the pelves of women who became pregnant, went to the full period, and died after they were delivered by the Cæsarean operation. The disease runs its course with great celerity in some cases; in others the softening of the bones goes on for several years. This happened in the instance related by Sir Charles Bell, where the Cæsarean section was performed, the patient having been repeatedly pregnant, and as the disease advanced greater and greater difficulty was experienced in effecting the delivery in each successive labour, until, at last, the dimensions of the brim of the pelvis were so diminished that it was found impossible to deliver the child by craniotomy. The distance from the sacrum to the symphysis pubis did not exceed an inch, and there was not sufficient space on either side of the pelvis to admit of the head being drawn through by embryotomy, even if it could have been performed.

This fatal disease is very rarely met with in London. Only one case has come under my observation, and from its history, perhaps, you will learn, better than from a general description of the disease, its early symptoms, and the changes which take place in the pelvis during its progress, and the great and almost insurmountable difficulties it presents to delivery if the pregnancy is allowed to go on to the end of the ninth month. A woman, aged 30, had been forty-eight hours in labour, with her fourth child, when I was called to deliver her, on the 17th of January, 1830. The pelvis was very greatly distorted, the whole head of the child was above the brim, and the orifice of the uterus was not more than half dilated. The pains had nearly ceased, and she was completely exhausted. After perforating the head, three hours elapsed before I succeeded in extracting it with the crotchet, and not till all the bones had been literally torn to pieces. She recovered as if it had been a natural labour. She was a native of Manchester, and had spent several years in one of the cotton manufactories of that town. She married at twenty, and had given birth to three children at the full period, without assistance. During the fourth pregnancy she suffered much from pains about the sacrum and ilia, which were supposed to be rheumatic, and she had become unable to walk. On the 11th of July, 1832, this patient was again in labour at the full period, having refused to submit to the induction of premature labour. The labour continued upwards of thirty hours before the os uteri could be felt, or the presenting part ascertained; and during fifteen hours it appeared extremely probable she would die undelivered if we did not perform the Cæsarean operation. The head was perforated and extracted, but with still greater difficulty than in her previous labour. She recovered again, in spite of all the violence that had been employed in extracting the head, as if it had been an easy and natural labour.

In the month of June, 1833, when she was at the end of the third month of her next pregnancy, I passed up this slender silver catheter [showing the instrument] into the uterus, and drew off the liquor amnii, and the fœtus was expelled eight days after, without any assistance, and she recovered as if it had been a common abortion. On the 12th February, 1835, I induced premature labour in the same patient at the commencement of the seventh month of the following pregnancy, and the fœtus was expelled without assistance, dead, and she recovered again in the most favourable manner.

On the 19th of January, 1836, when she was at the end of the sixth month of pregnancy, I made an unsuccessful attempt to perforate the membranes; the ergot of rye was given, but it completely failed to excite uterine contractions. Other attempts were made to bring on labour during the two succeeding months, without effect, and it is probable she would have gone to the full period had I not, in the meantime, provided myself with this stiletted probe-pointed silver catheter [showing the instrument]. This was readily passed into the uterus, and the membranes perforated on the 14th of March. Labour followed in a few days, and the nates presented. When the os uteri was sufficiently dilated, the point of the crotchet was forced through the anus into the pelvis of the fœtus, and fixed upon the bones, and the trunk and extremities of the child were drawn with great difficulty through the mother's pelvis. The perforator was then passed up to the occiput, and a free opening made in the back part of the skull, and the head extracted with the crotchet. Several hours were spent in accomplishing the delivery, and she died the following day, with vomiting and other symptoms of ruptured uterus. On dissection, I found the muscular coat of the anterior part of the neck of the uterus deeply lacerated; the brim and cavity of the pelvis, you see [showing the preparation] are very much distorted. The last lumbar vertebra occupies the usual situation of the base of the sacrum, which is pressed down into the cavity of the pelvis; the bones of the pubes have been forced together, so that the brim has a triangular shape. On the left side, a line drawn from the middle of the last lumbar vertebra to the ilium behind the acetabulum measures one inch and a half. On the right side, a corresponding line measures only an inch and a quarter. From the middle of the last lumbar vertebra to the bones of the pubes the distance is an inch and three-quarters. At the outlet the tuberosities are only three or four lines asunder, and there is no pubic arch. The lower extremity of the sacrum and coccyx pass horizontally forward, so that the apex of the coccyx is only two inches and a quarter from the point where the tuberosities of the ischia nearly meet. The bones of the extremities were not affected.

As pregnancy and delivery generally accelerate the progress of mollities ossium, I now think it would have been better practice, in this case, to have interrupted the pregnancy, or induced abortion in the course of the second month, which could safely have been done with this probe-pointed instrument, had I possessed it at the time.

Where the pelvis has been fractured, or the brim, cavity, or outlet, is much obstructed by exostoses, it would also be proper to induce labour at an early period of pregnancy, which would render the Cæsarean operation unnecessary.

In some systems of Midwifery, instruments have been described for measuring the dimensions of the pelvis in the living body, and representations given of pelvimeters, some of which are intended to be applied, like a pair of compasses, to the outside of the pelvis, and others to be passed within it. If you examine this pelvis distorted by malacosteon, you will at once see that these instruments can be of no use whatever in practice; the bones of the pubes are here pressed together, so that the points of a pelvimeter, applied over the symphysis pubis and base of the sacrum, would indicate a space in the short diameter of the brim of the pelvis about two inches greater than actually exists.

All the morbid conditions of the pelvis can be ascertained with sufficient precision during life by introducing the fore-finger of the right hand into the vagina, and passing it around the interior of the pelvis. If the point of the finger cannot touch the promontory of the sacrum, there is little or no distortion of the brim, and by moving the finger from side to side and backward, it will readily be discovered if the tuberosities of the ischia are at the usual distance from each other, and if the direction of the sacrum and coccyx is altered.

Distortion of the pelvis from rickets. — The softening of the bones of the pelvis from rickets occurs generally before puberty, and in a great proportion of cases the long bones of the extremities are likewise affected, and sometimes, also, the spine. But the spine is not unfrequently affected both with angular and lateral curvature, from ulceration of the vertebræ and cartilages, where the pelvis remains in the natural state. The changes produced in the pelvis by rickets are numerous, and do not differ essentially from those observed in malacosteon. In this short skeleton [showing a specimen] the head is remarkably large, the long bones of the extremities are all bent, and the pelvis is precisely in the same condition as the pelvis which you have just seen distorted by mollities ossium. The base of the sacrum is pressed forward, and the front and sides of the pelvis inward and backward, so as to give the brim a triangular shape. The tuberosities of the ischia have likewise been pressed into contact, and the arch of the pubes destroyed.

There is another form of distortion of the pelvis from rickets seen in other pelves and casts upon the table. The brim in these is of an elliptical shape, and the tuberosities of the ischia, instead of being nearer one another than usual, are separated to a greater distance, and the outlet of the pelvis appears enlarged. The sacrum, in most of these, is nearly straight from the base to the apex. In several, the distortion is greater on one side than the other. In all, the distortion has reached a certain point, and then appears to have ceased to increase; unlike what happens when the pelvis is affected with malacosteon.

The regular process of delivery is necessarily interrupted by all these morbid states of the pelvis. When the distortion of the brim is slight, the head is usually forced through after a protracted labour, and the child is often injured from the pressure it has sustained. When the distortion is greater, the head becomes arrested in the brim, and cannot pass till its volume is reduced; and where the distortion is in a still higher degree, the head of the child never enters the brim, however long the labour may be allowed to continue.

If the bones of the extremities are not much bent, and the pelvis not highly distorted, we are seldom consulted until the full period of pregnancy has been reached, and the person has been long in labour. The delivery may require to be completed with the perforator and crotchet, and the dimensions of the pelvis are then, for the first time, ascertained. In a subsequent pregnancy it becomes necessary to induce premature labour at the end of the seventh, or seventh and a half month — an operation attended with little danger to the mother, and which has preserved the lives of many children which would otherwise have been sacrificed. Even in a first pregnancy, when it is known that the pelvis is very much distorted, I hold it justifiable to induce premature labour.

LECTURE III.

THE ANATOMY OF THE UNIMPREGNATED UTERUS AND ITS APPENDAGES.

The ovaria and fallopian tubes, the uterus, vagina, and external organs, compose the generative system of the human female. The uterus is situated within the pelvis, behind the bladder, before the rectum, below the small intestines, and above the vagina. The vagina extends downwards and forwards obliquely, between the bladder, urethra and rectum, from the uterus to the vulva, which is situated at the outlet of the pelvis. Between the layers of peritoneum, which are reflected from the sides of the uterus to the pelvis, forming the broad ligaments, are inclosed the fallopian tubes, ovaria, and round ligaments.

The two *ovaria* are situated on the sides of the uterus, in the posterior duplicatures of the broad ligaments, behind and a little below the fallopian tubes. At the age of puberty the ovaria are of an oblong form, flattened on the anterior and posterior surfaces, varying from an inch to an inch and a half in length, and from a quarter to half an inch in thickness. The inner extremity of each ovarium is fixed to the uterus by a short band or ligament, chiefly consisting of fibres sent off from the muscular coat of the uterus. In this preparation there is a small fibro-cartilaginous tumour, with its bloodvessels injected, which has been formed in the right ovarian ligament. The outer extremity of each ovarium is always attached to the corpus fimbriatum, and by this means the relative situation of the ovarium to the fallopian tubes and uterus is preserved.

The ovaria consist of a serous coat derived from the peritoneum, and a dense parenchymatous structure, called the stroma, in which the Graafian vesicles or ovisacs are contained. Some anatomists describe a fibrous tissue under the peritoneum of the ovary, which they have called the tunica albuginea. The Graafian vesicles differ from one another in size. On an average they measure about two lines in diameter, and generally exceed ten in number. The largest project at the surface, and the smaller vesicles are imbedded in the stroma of the ovary. Each vesicle consists of two distinct coats, or membranous layers, which adhere so firmly, that they are separated with great difficulty from one another. Their outer coat adheres loosely to the stroma of the ovary by soft cellular membrane, through which numerous arteries and veins pass to the vesicle, and ramify upon its coats. The frequent extravasation of blood into the cavities of the Graafian vesicles proves that their inner membrane is vascular.

Within each Graafian vesicle is a layer composed of granules; and within this layer is an albuminous fluid. Imbedded in that part of the granular layer corresponding to the place where the wall of the Graafian vesicle is in contact with the peritoneum, is the ovum or ovule. This is a very minute body, of a rounded form, consisting of yelk granules, contained within a thick transparent envelope, which is just perceptible to the naked eye. The part of the granular layer where the ovum is situated is in the form of a disc, in which there is a cup-like depression, in which the ovum lies. The disc is called the proligerous disc. If a Graafian vesicle be removed from a recent human ovarium, and opened upon a plate of glass, and the contents pressed out, the transparent ovum can readily be observed with the naked eye, or with a simple magnifier, after the opaque granules in which it is imbedded have been washed away with a few drops of pure water.

Fig. 1.*

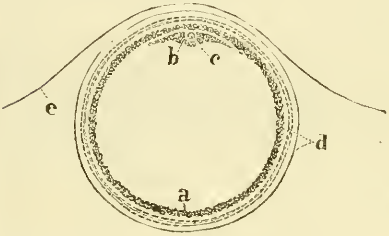
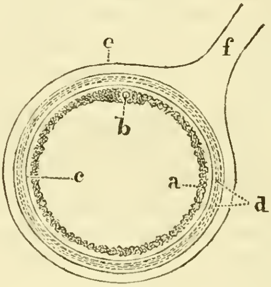


Fig. 2.†



According to the independent microscopical observations of Coste in the rabbit, and of Valentin and Mr. Wharton Jones in several of the mammifera, there is a transparent vesicle, about one-sixth of the diameter of the ovum, inclosed within it, which is analogous to the vesicle which exists in the cicatricula of the immature eggs of birds, and also in the ova of all other animals. This is called the germinal vesicle; and on one side of this there is an opaque spot, called the germinal spot.

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[*] Fig. 1 is a diagram of a section of the Graafian vesicle and its contents, showing the situation of the ovum. *a.* The granulary membrane. *b.* The proligerous disc. *c.* Ovum. *d.* The inner and outer walls of the Graafian vesicle. *e.* Indusium of the ovary derived from the peritoneum, the stroma immediately underneath which is condensed so as to form the *tunica albuginea.*

[†] Fig. 2 is a diagram representing a section of the hen's egg within the capsule of the ovary, and the position of the vesicle of Purkinje. *a.* The granulary membrane, forming the periphery of the yelk. *b.* The vesicle of Purkinje embedded in the cumulus. *c.* The vitellary membrane. *d.* The inner and outer layers of the capsule of the ovum. *e.* The indusium of the ovary. Betwixt the indusium and the capsule the stroma is seated. *f.* The pedicle by which the capsule is attached to the ovary.

This spot was discovered and described simultaneously and independently in this country and in Germany, by Mr. W. Jones and Professor Wagner. The germinal vesicle, and the spot on its side, of the mammiferous ovum, was, I believe, first shown in London, in 1837, at the College of Surgeons, by Mr. Wharton Jones, two years after I had presented his paper to the Royal Society describing and delineating it.

The earlier anatomists believed that the ovaria performed a function similar to the testes. Harvey supposed something indefinite came from the ovaria, but thought it was only in the uterus that the ovum was formed. Steno, having observed the Graafian vesicles in the ovaria of the deer, guinea-pig, sow, ass, wolf, &c., and supposing them to be ova, concluded that the ovum is first formed in the ovaria, and afterwards developed in the uterus.

De Graaf, in 1672, first accurately described the structure of the ovaria, and the vesicles they contain. He ascertained that these burst after impregnation; that a yellow substance, called the corpus luteum, is formed in the situation of the ruptured vesicles; and that the number of these yellow bodies corresponds with the number of embryos subsequently found within the uterus. In the fallopian tube of the rabbit, three days after impregnation, he saw bodies of a defined shape, much smaller in size than the vesicles in the ovaria; from which, recognizing these bodies as ova, he inferred that these vesicles of the ovaries are not the ova. In 1778, Cruickshanks made some experiments which confirmed the accuracy of De Graaf's observations, which had been called in question by Haller and other physiologists. Prevost and Dumas twice perceived a small spherical body within the unimpregnated Graafian vesicle of the rabbit, which they suspected was the ovule. Professor Baer first unequivocally demonstrated, in 1827, the ovum in the ovary; but he mistook its nature, supposing it to be analogous to the germinal vesicle discovered by Purkinje, two years before, in the cicatricula of the immature egg of the bird. The discovery of the germinal vesicle in the mammiferous ovum by Coste, Valentin, and Jones, demonstrated the inaccuracy of Baer's view, and established the true nature of the body contained in the Graafian vesicle.

The ovaria are long and slender in the fœtus, and are then placed upon the psoæ muscles, a little way under the kidneys. They contain small Graafian vesicles soon after birth. At the age of puberty their volume increases, and the Graafian vesicles enlarge and contain ova. The surface of the ovaria is perfectly smooth [exhibiting a preparation] until the period when menstruation commences; it is afterwards marked by irregular depressions, like cicatrices, in the peritoneal coat. After the cessation of this function the ovaria shrink, become hard and *unequal*, and the coats of the Graafian vesicles are thick and opaque, and their cavities often filled with a black, red, or fawn-coloured substance, of a soft consistence. In extreme old age the parenchymatous substance of the ovaria is so much diminished, that they are not larger than those of a young child, and have the same shape.

The development of the pelvis, uterine system, and mammæ, the function of menstruation, and all the peculiarities of the human female, depend upon the ovaria. The ovaria may be considered as the essential organs of the generative system in all the different classes of animals, for they are always present, whatever form this system may assume. At each menstrual period a Graafian vesicle bursts, and the contents escape. When the ovum is impregnated, it passes from the ovary into the fallopian tube, and a corpus luteum is formed around the Graafian vesicle in which it had been contained.

The ovaria are liable to many diseases from the age of puberty to the period when the catamenia disappear. Their peritoneal coat often becomes inflamed, and false membranes are formed, by which they become firmly united to the fallopian tubes and uterus. The coats of the Graafian vesicles are often in a thickened morbid state, and their cavities distended with blood and other fluids. Great cysts and tumours, some of which are of a malignant nature, are not unfrequently formed in the Graafian vesicles, or parenchyma of the ovaria. All these, and the diseases of the unimpregnated uterus, fallopian tubes, vaginal and external parts, which are numerous and important, will be considered in a subsequent part of the course.

The *fallopian tubes* extend between the upper and lateral part of the uterus to the ovaria. They are from four to five inches in length, and are situated in the middle duplicatures of the broad ligaments, between the two layers of peritoneum, as the intestines are in the mesentery. They pass from the sides of the uterus at first upwards and outwards, and then downwards, where each terminates in a wide, open, expanded extremity, which is divided into fringes, and is called the corpus fimbriatum. In each fallopian tube there is a canal, by which a communication is formed between the peritoneal cavity and the cavity of the uterus. This canal is very slender where it is entering the uterus, being only sufficient to admit a bristle; but it is wider towards the outer extremity. Air and mercury pass readily along the tubes, from the corpora fimbriata into the cavity of the uterus.

The fallopian tubes consist of a peritoneal, muscular, and mucous coat. The latter is a continuation of the mucous membrane which lines the cavity of the uterus; and through the whole course of the tube it forms longitudinal plicæ, which run in a spiral direction, as in the oviducts of birds.

Between the mucous and peritoneal coats of the tubes is situated the muscular coat. In the ordinary condition of the tube, the fibres of this coat are so thin and pale, that it is difficult to demonstrate them, and some anatomists have, in consequence, expressed doubts about the existence of a muscular coat in the fallopian tubes.

Here is a specimen of fallopian tube gestation in which the muscular coat of the right fallopian tube is more than a quarter of an inch in thickness. The entire ovum is contained in the tube, about midway between the two extremities; the decidua, chorion, amnion, placenta, embryo, and even the vesicula umbilicalis, are all in the tube, and there is no vestige of decidua within the uterus. The walls of the tube had performed in this case all the functions of the uterus, till the time it burst, and the fatal internal hemorrhage took place. The muscular coat of the tube could readily be separated into distinct strata or layers, like the walls of the gravid uterus, and you can see large veins running through it similar to the sinuses of the uterus. I traced a communication by means of the coagula of the fibrin of the blood which filled these veins, between the interstices of the fœtal vessels of the placenta, and these veins in the muscular coat of the tube, which opened obliquely into one another, and enlarged as they proceeded outward to the surface, where they terminated in one of the spermatic veins.

One of the best modes of examining the structure and connections of the fallopian tubes is to remove them with the ovaria from the uterus, and lay open the canal of the tubes from the corpora fimbriata to the uterus, and cover them with water or alcohol, or suspend them in fluid. This has been done in another preparation I now show you; and the tube thus opened, the walls of the canal of which are held asunder with bristles, is suspended by the ovarium in alcohol.

A bristle fills the canal where it is cut across near the uterus. The canal is seen enlarging towards the corpus fimbriatum, and the longitudinal folds of the lining membrane are remarkably distinct. The corpus fimbriatum presents the appearance of a large, soft, vascular membrane, folded up like a fan or umbrella, and one of its broad fringes is seen uniting with the outer extremity of the ovary. The peritoneal coat of the ovary is continuous with that of the fringe by which the tube and ovarium are united.

In another preparation before you the bloodvesselsof the ovaria and fallopian tubes have been very successfully injected. Numerous branches of arteries from the spermatics are seen proceeding to the tubes, and especially to its outer extremity, and forming complete loops or rings around them. Branches from the same arteries supply the ovaria. There is a plexus of great tortuous veins also seen extending between the base of the ovaria and the tubes, which are much larger than they would be if their sole function were to return the blood from the arteries of the tube. These veins probably answer the purpose of an erectile tissue, and cause the necessary approximation of the ovaria and tubes when conception takes place.

The structure of the fallopian tubes is often destroyed by adhesive and suppurative inflammation. An accumulation of a large quantity of fluid sometimes takes place in their canals, when their extremities have been closed by inflammation and other causes. In persons who have died of tuberculous phthisis, I have occasionally seen a quantity of soft, scrofulous matter within them, and their coats thickened and indurated. Fibrous and malignant tumours are very rarely developed in the walls of the fallopian tubes.

Ciliary movements have been observed by Purkinje and Valentin in the mucous membrane of the fallopian tubes, uterus, and vagina of the rabbit, both before and after impregnation. The direction of the motion is from within outwards. I do not know whether this has been seen in the human subject.

In shape the *uterus* resembles a pear, about three inches long, compressed before and behind. The large extremity is placed superiorly, and the small inferiorly in the pelvis. The uterus is in the direction of the brim of the pelvis, and the vagina, with which it forms a great angle, is in the axis of the outlet. The uterus is divided into fundus, body, cervix, and orifice. The *fundus* is the convex portion, which lies above the entrance of the fallopian tubes into the cavity. The *body* of the uterus extends between the fundus and *cervix*, which is the contracted part below, and which terminates in the *os tincæ*. The uterus consists of a dense muscular coat, which is invested on the outer surface by peritoneum, and internally by a mucous membrane, which is continuous with the inner membrane of the vagina and fallopian tubes. The peritoneum adheres firmly to the muscular coat of the whole fundus, and a considerable portion of the body of the uterus; but between the muscular coats and peritoneum of the lower part of the body and cervix there is a quantity of soft cellular membrane interposed. The peritoneum behind passes down, and, after covering the whole cervix uteri and a small portion of the vagina, is reflected upward over the rectum. The anterior part of the cervix uteri, being in immediate contact with the bladder, is not covered with peritoneum. The muscular coat is so dense that it is impossible to separate and to trace the particular direction of the fibres of which it is composed, or to demonstrate the course which they pursue, as we can do in the gravid uterus. Around the fallopian tubes they appear to run in a concentric direction. From the upper and forepart of the uterus, near the fallopian tubes, the round ligaments pass off, which run through the abdominal canals, and are lost about the groins and external parts. These have an entirely different structure from the broad ligaments, which are layers of peritoneum, or from ligaments in any other part of the body. In the gravid uterus it can be readily shown that they are almost entirely composed of fibres sent off from the muscular coat of the uterus with bloodvessels and nerves.

If an incision be made through the walls of the uterus before or behind, its small, triangular-shaped cavity, lined with a vascular membrane, comes into view. The fallopian tubes open into its upper angles, and the cervix uteri into its lower angle.

The *cervix uteri*, which varies in length, is contracted at the upper and lower, or uterine and vaginal orifices. The *penniform rugæ* are situated in the middle part of the cervix, between which there are seen numerous orifices of compound mucous ducts or lacunæ, which secrete a peculiarly viscid matter. The Nabothean glands, which often present the appearance of small sacs distended with viscid fluid, are situated both upon the margin of the os uteri and within the cervix. The *os uteri* has two lips, with a transverse chink or depression, which is sometimes so slight that it can scarcely be felt with the point of the finger. There is a great difference observed in the length of the cervix, in the shape of the orifice, and condition of the lips, in different subjects. In some the os uteri is like a flattened nipple, and projects slightly into the vagina; in others it is round and prominent. The anterior lip usually hangs lower in the vagina than the posterior; the vagina being united to the cervix uteri higher up behind than before. In women who have had children the os uteri is not so uniformly smooth and regular as in those who have never been pregnant.

The internal membrane of the uterus is so thin and delicate, and adheres so firmly to the muscular coat, that its existence, as a separate tunic, has been called in question by some anatomists. In several preparations now exhibited fibrous tumours have been developed under this membrane; and you can see it distinctly reflected over the surface of these tumours from the uterus. The appearances presented by the fibres of the middle coat of the gravid uterus, and the sensibility and contractile power of the uterus during labour, prove, beyond all doubt, that it is muscular, which has likewise been disputed.

The vagina extends from the uterus to the external parts. It consists of an internal mucous membrane, and of a dense, highly elastic fibrous tissue, in which numerous arteries and veins ramify, and to which many nerves are distributed. The coats of the vagina are continuous with the middle and internal coats of the cervix uteri. This is clearly seen in this preparation of the uterus and vagina, in which the cervix is much elongated, and the coats of the vagina thickened from irreducible prolapsus for several years. The penniform rugæ and compound lacunæ are also much more distinctly seen in this lengthened cervix than in the ordinary condition of the part. Near the orifice of the vagina, the lining membrane, especially of the anterior wall, is thick, and deep transverse rugæ or plaits are observed in it, and in the posterior surface. There are numerous papillæ on the edges of these rugæ, and many mucous follicles between them. The vagina is widest at the upper part, where it is attached to the uterus; and its lining membrane is more smooth than near the orifice.

There is a great plexus of veins in the outer coat of the vagina near its orifice, which is also surrounded with the sphincter vaginæ muscle. The vagina adheres firmly by cellular membrane to the urethra, the bladder, and rectum. Its upper extremity is attached to the neck of the uterus lower down before than behind. The posterior wall of the vagina is separated from the rectum the whole thickness of the perineum, by a triangular space, which is filled with a cellular membrane. The direction of the axis of the vagina, as I have already said, does not correspond with that of the brim, but of the cavity and outlet of the pelvis.

The orifice of the vagina is about an inch and a half from the symphysis pubis; and it is either partially closed by the *hymen*, which is a doubling of the lining membrane, of a concentric shape, or it has several small prolongations of the lining membrane projecting from it, which are called the *carunculæ myrtiformes*.

The mons veneris, labia, clitoris, nymphæ, vestibulum, and perineum, are the external parts of generation. The *mons veneris* is situated over the symphysis pubis, and is composed of adipose and cellular membrane covered by the integuments. It divides into the *labia*, which pass down and bound the orifice of the vagina on each side, and afterwards unite at the anterior border of the perineum.

Between the labia is situated the *vulva*, which contains the clitoris, nymphæ, and the orifices of the vagina and urethra. The body of the clitoris, which is situated at the upper part of the vulva, is formed by the union of its two crura, and its anterior extremity is covered by the prepuce, from each side of which one of the nymphæ descends obliquely about an inch and a half. The nymphæ chiefly consist of dense cellular tissue and bloodvessels. Under the clitoris and between the nymphæ is the smooth, triangular space called the vestibulum, at the lower part of which, and immediately above the ostium vagina, is the orifice of the urethra. The urethra passes to the bladder under the symphysis pubis along the upper surface of the vagina, to which it is firmly united by a thick, fibrous and vascular structure. The mucous membrane of the urethra is usually of a red colour, and it is perforated with the ducts of several mucous glands. Two of these, near the orifice, have been called Cowper's glands of the female. The perineum extends from the posterior commissure of the labia or fourchette to the anus. Within the fourchette is a smooth, depressed cavity, called the fossa navicularis.

The uterus and its appendages are supplied with blood from the spermatic and hypogastric arteries. The spermatics, after sending branches to the tubes and ovaria, pass down to the uterus, and there freely anastomose with the uterine branches of the hypogastrics. The upper part of the uterus is chiefly supplied with blood by the spermatic arteries; and the body, cervix, and vagina, solely by the hypogastrics. The whole muscular coat of the uterus, as you may observe in this preparation, is pervaded with innumerable convoluted branches of the spermatic and hypogastric arteries, which have been injected, and are seen passing obliquely through the different strata to the lining membrane. The veins form a great plexus in the muscular coat, which can readily be traced from the inner to the outer surface of the uterus, opening obliquely into one another, and enlarging as they approach the trunks of the spermatic and hypogastric veins. Even in the unimpregnated uterus the veins form great plexuses, not only in the substance of the organ, but around the cervix and body, and in the walls of the vagina, and between the ovaria and fallopian tubes. In this preparation all these veins have been filled with blue injection; and they are so large, that the uterus appears literally imbedded in them. At the full period of pregnancy the veins in the substance of the uterus form one of the greatest plexuses in the human body; and where the placenta adheres, they open, after its separation, into the cavity of the uterus. The lining membrane of these great veins — and they have only one membrane, and no proper valves — is continuous with the mucous membrane of the uterus, as the lining membrane of the fallopian tubes is continuous with it and with the peritoneal sac. I believe it is in consequence of the peculiar manner in which the great veins open into the cavity of the uterus that attacks of uterine and crural phlebitis occur so often after delivery, and of which I now show you one of the most striking examples that has yet been observed.

Upon the table is the uterus, and all the veins connected with it, of a woman who died on Monday, the 9th instant, four weeks after delivery, and who had true phlegmasia dolens in both lower extremities, the left having been first and most severely affected. She was under the care of Mr. Brookes, of Bedford Street, and Mr. Jones, Soho Square, and suffered chiefly from great debility, fever, constant sickness, and diarrhœa. I examined the body with Mr. Beck on the 12th instant (the day before yesterday); and we removed all the pelvic viscera, bloodvessels, and nerves, which you now see. There is no trace of peritoneal inflammation about the uterus; and the intestines were perfectly sound. All the veins of the cervix uteri, on the left side, are filled with pus and lymph, and coated with false membranes. The same is the condition of the left internal, common, and external iliac and femoral veins. The coats of the vena cava are greatly thickened as high as the diaphragm, and a rough, false membrane adheres to the whole of its inner surface. Within this is a soft, yellowish substance, which washes away like a mixture of pus and lymph, with coagula of blood. A quantity of purulent fluid escaped from the vena cava when it was opened near its bifurcation; and at this point there was a firm union between the vein and the last lumbar vertebra and cartilages. The right common, external, and internal iliac, and femoral and saphena veins, are all destroyed by inflammation, though less disorganized than on the left side. The left spermatic vein, from the uterus to its termination in the renal vein, is thickened and lined with false membranes, and filled with coagula of blood. The liver and lungs contained no secondary abscesses. An incision was made through the integuments and cellular tissue down to the fascia of the right leg, which was most swollen, and a quantity of serum flowed out of the cellular tissue, which appeared quite healthy.

This dissection demonstrates that in this case of phlegmasia dolens the inflammation commenced in the uterine branches of the hypogastric veins, and subsequently extended from them into the iliac and femoral trunks of the affected side.

The absorbents of the uterus and its appendages accompany the spermatic and hypogastric veins. As they are extremely small, and are demonstrated with great difficulty in the unimpregnated uterus, and as I have no preparation to show them injected, nor have ever seen one, it will be more satisfactory to describe them hereafter, with the nerves of the gravid uterus.

LECTURE IV.

ON THE PHYSIOLOGY OF THE UNIMPREGNATED UTERUS AND ITS APPENDAGES.

At the age of maturity, when the uterine system is fully developed, menstruation commences. The appearance of the discharge from the uterus is usually preceded by constitutional disturbance, sense of weight within the pelvis, pain in the back and loins, and other symptoms of congestion of the bloodvessels of the uterus, and irritation of its whole nervous system. These subside as the catamenia flow; and in some women they are so slight as scarcely to be observed. The discharge takes place every four weeks, or lunar month, and lasts two, three, four, five, or more days, and is accompanied by the detachment or exfoliation of the delicate epithelium of the mucous membrane of the uterus, which is soon reproduced. In some it continues only two days, in others three, and in a few eight, or even more. The usual period is from three to six days; the largest quantity escaping on the second and third; and it most frequently returns at intervals of three or four weeks. The intervals between the periods of menstruation are, in some, invariably the same; in others they are unequal by several days. Its periodical return is accompanied frequently with the local and constitutional symptoms described.

It is difficult to ascertain the precise quantity of menstrual fluid which is discharged at each period. It probably varies from three to six ounces; but the same persons have often more at one period than another; and there is a great difference observed among women, not only in the quantity, but in the duration of each menstrual period, and the length of the intervals between them.

The fluid has a red colour, like blood; in some florid, like arterial blood; and in others of a darker colour, like venous blood. In the healthy condition blood corpuscles can be detected in it. It contains much less fibrin than blood, and does not generally coagulate, nor become decomposed when preserved for any length of time. Professor Brande analysed the menstrual fluid once; and he says it has all the properties of a very concentrated solution of the colouring matter of the blood, in a diluted serum. It was fluid which had long been accumulating in the vagina. Gmelin states that it contains no globules, is green by transmitted light, and resembles a strong solution of the colouring matter of the blood in serum. In a case where the fluid had been retained for some time by an occlusion of the vagina, it appeared as a thick, glutinous, reddish-brown syrup, without any smell: three days' exposure to the air produced no change in it; there was no deposit or coagulum, nor any approach to putrefaction: it was liquified by potash, and thickened by sulphuric acid and alcohol: water, in which it was immersed, took very little of its colour, but subsequently became clouded by evaporation, and as if coagulated on the action of alcohol. About two years ago I saw a similar case of occlusion of the vagina, in which a quantity of fluid similar to that now described had accumulated; but, on being kept for some days, it became decomposed as blood would have done. I believe we are still in want of a good chemical analysis of healthy menstrual fluid. One thing respecting it is certain, whatever its chemical composition may be, that it has none of the irritating noxious qualities which were attributed to it by Pliny, Columella, and some modern writers. Galen knew that it proceeds from the inner surface of the uterus, and that it is different from blood. In cases of prolapsus of the uterus, it has been seen flowing from the os tincæ, and from the lining membrane where the uterus has been inverted. "In a natural evacuation of blood, viz., menstruation," says Mr. Hunter, "it is neither similar to blood taken from a vein of the same person, nor to that which is extravasated by an accident in any other part of the body; but is a species of blood, changed, separated, or thrown off from the common mass, by an action of the vessels of the uterus similar to that of secretion; by which action the blood loses the principle of coagulation, and, I suppose, of life." Most physiologists have adopted this view of menstruation, and consider it as a peculiar function of the lining membrane of the uterus, analogous to secretion.

It has been stated, by almost all writers, that women reach maturity, and that menstruation commences much earlier in hot climates, particularly between the tropics, than in temperate and very cold countries. Haller states, that in the warm regions of Asia, the catamenia appear from the eighth to the tenth year; and in Switzerland, Britain, and other temperate regions, at the age of twelve or thirteen, and later the farther we ascend towards the north. The same view is taken by Denman, Burns, and Dewees, who have inferred that, like plants, animals reach maturity sooner in hot than in cold countries. Dewees says, menstruation occurs later in the northern and southern States of America.

"The early or late appearance of the menses," observes Dr. Denman, "may depend upon the climate, the constitution, the delicacy or hardness of living, and upon the manners of those with whom young women converse. There seems to be an analogy between the effect of heat upon fruits and the female constitution, with respect to menstruation; for the warmer the climate, the sooner the menses appear. In Greece and other hot countries, girls begin to menstruate at eight, nine, and ten years of age; but, advancing to the northern climates, there is a gradual protraction of the time till we come to Lapland, where women do not menstruate till they arrive at maturer age; and then in small quantities, at long intervals, and sometimes only in the summer." Müller repeats this in the last volume of his "Physiology."

Mr. Roberton, of Manchester, has published, in the North of England, and Edinburgh Medical and Surgical Journals, several elaborate and extremely interesting papers, containing numerous facts to prove that, in this country, the natural period of puberty in women occurs in a much more extended range of ages, and is more equally distributed through that range, than authors have alleged; and that, in other countries, the parallel between plants, fruits, and the female constitution, does not hold good. The following table shows the ages at which 450 women began to menstruate in Manchester.

10 at 11 years of age.	85 at 14 years of age.	26 at 18 years of age.
19 „ 12 „	97 „ 15 „	23 „ 19 „
53 „ 13 „	76 „ 16 „	4 „ 20 „

In five sisters it commenced at eleven, and one was a mother at 12: rendering it probable that the period of puberty depends on constitutional and probably hereditary peculiarities.

The following table, showing the ages at which eleven hundred women began to menstruate in London, corroborates the preceding statements respecting the extended range of ages in which puberty occurs:—

11 began to menstruate at 9 years of age.	101 began to menstruate at 17 years of age.
55 „ „ 10 „	78 „ „ 18 „
52 „ „ 11 „	33 „ „ 19 „
86 „ „ 12 „	23 „ „ 20 „
153 „ „ 13 „	6 „ „ 21 „
204 „ „ 14 „	2 „ „ 22 „
201 „ „ 15 „	1 „ „ 23 „
154 „ „ 16 „	

At Göttingen, Osiander ascertained the ages at which 137 women began to menstruate. In 21 of these the catamenia first appeared at 14; in 32 at 15; and in 24 at 16 years of age. Nine began at 12, and one not before the 24th year.

In 77 women observed by Mr. Roberton, 1 ceased to menstruate at the age of 36: 4—40: 1—42: 1—43: 3—44: 4—45: 3—47: 10—48: 7—49: 26—50: 2—51: 7—52: 2—53: 2—54: 1—57: 2—60: and 1 at the age of 70.

Of 132 women in London, I ascertained with certainty that menstruation ceased in —

1 at 22 years of age.
1 „ 24 „
1 „ 30 „
2 „ 34 „
2 „ 35 „
1 „ 36 „
1 „ 37 „
3 „ 38 „
4 „ 39 „

13 at 40 years of age.
4 „ 41 „
7 „ 42 „
10 „ 43 „
9 „ 44 „
14 „ 45 „
7 „ 46 „
2 „ 47 „
10 „ 48 „

7 at 49 years of age.
10 „ 50 „
4 „ 51 „
7 „ 52 „
4 „ 53 „
2 „ 54 „
4 „ 55 „
2 „ 56 „
1 „ 62 „

Mr. Roberton has collected together many facts which tend to prove that, in other countries, there is no parallel between plants and the female constitution. He quotes passages from the Travels of Hearne, Back, Lyon, and Dr. Richardson, to prove that the North American, Cree Indians, Copper Mine Indians, and the Esquimaux, frequently begin to menstruate at twelve, thirteen, and fourteen years of age. From the statements of Baron Humboldt, the same is equally true of the Korriacs, and the tribes of Northern Asia, where girls of ten years are sometimes found mothers. The notion that women in Lapland do not menstruate till twenty, and only in summer, is founded on a mistake committed in the translation of the following passage in Linnæus's "Flora Lapponica." "Hoc etiam musco catamenia excipere abstergereque feminas lapponicas mihi relatum fuit. Naturam æque hic ac alibi sibi similem esse, feminasque in Lapponia legibus menstruorum similibus obedire: dubium nullum est, licet hæ cruoris minorem fundant copiam innocentissimè. Fuere et feminæ plures hic quas vidi, per totam suæ vitæ periodum, ab hac lege exceptæ, licet hæ maritatæ steriles persistant. Novi et juvenculas quæ non hyme, sed solâ modo æstate has observant crises: imo et alias, quæ semel in anno purgabantur, et hæ, quot quot vidi, pedes œdematosos habebant." Tooke states that the Sclavonian or native Russians reach puberty at an early age, at their twelfth or thirteenth year; and that the same is the case with the Samoiedes, Korriacs, and Kamschatdales. In the Crimea, and in all the Russian provinces along the Black Sea, and in the Ukraine, I had good opportunities, during three years, of ascertaining the period when menstruation usually commences and ceases, and all the derangements to which this function is liable, in the higher and lower classes; and my conviction is, that over the whole South of Russia the usual period of puberty is the same as in Great Britain, and that women cease to bear children at the same age. Mr. Roberton refers to the works of Mr. Crawford and Sir Stamford Raffles for proofs that the same is the case at Java, and in all the islands of the Indian Archipelago; and that the body continues to grow there as long, and that women bear children to as late a period of life, and that longevity is as frequent as here. From the statements of Dr. Winterbottom, the same is the case with Sierra

Leone. Mr. Roberton thinks that the early marriages, and the universal licentiousness and depravity of morals which reign in Arabia, will account for any difference observed in that country.

Mr. George Babington, Surgeon to St. George's Hospital, has informed me, from an examination of documents at the Statistical Society, that the period of puberty in the island of Grenada is the same as in this country; and Mr. Young, formerly a pupil of this class, and now in the West Indies, has communicated to me the same fact with respect to the island of Barbadoes.

In the 152d volume of the Edinburgh Medical and Surgical Journal, and in the Medical Gazette, vol. xxx., p. 677, Mr. Roberton has published a paper on the period of puberty in negro women, and has given a table from Jamaica, from which it appears that in 12 negresses the menses appeared in 1 aged 16: 3—15: 3—14: 3—13: and in 2 aged twelve years. It is stated by the Reverend Messrs. Elliot and Harvey, who communicated this information, that they could have added many cases of negresses from 8 to 11 years of age, in whom there is as yet no menstrual appearance.

Dr. Nicholson, of St. John's, Antigua, states, after being nineteen years in the island, with extensive opportunities for accurate observation, that he has never met with a case of menstruation before the 12th year, either in whites or blacks, but he has met with a few cases at that age both in whites and blacks and in the mixed race: that such cases are rare is proved by the fact of his having been consulted professionally on account of that circumstance. He states further, that menstruation commences most frequently in the 14th and 15th years, and that no difference exists in this respect between blacks and whites, but cases of tardy menstruation from chlorosis are more frequent with the latter. This he does not attribute to any constitutional difference existing in these races, but to local causes affecting the individual; such as miasmal effluvia, to which the blacks are more exposed. Dr. Nicholson adds that he has never met with a case of pregnancy before menstruation, but that irregular monthly discharges during pregnancy, in every respect resembling the catamenia, are not unfrequent occurrences in Antigua, particularly with white females of a sanguine temperament.

It is, however, right to state, that some gentlemen who have resided many years in the East Indies, the Brazils, and on the Coast of Africa, with whom I have conversed on this subject, and who have had good opportunities for observation, are of a contrary opinion, and still firmly believe that the period of puberty is earlier between the tropics than in Europe. As none of them investigated the subject, I think, with the requisite care, their evidence can have little weight when contrasted with the great mass of facts now adduced to support the opposite view. It has been stated that women who have been born in the East Indies, and who have been sent to England at an early age, begin to menstruate before the usual period in this country. I have seen a considerable number of cases which prove that there are numerous exceptions to this.

Menstruation is suspended during pregnancy, and generally during suckling, for six, eight, or ten months, or longer: some pregnant women have periodical discharges of blood from the uterus, but regular menstruation is rarely if ever observed during utero-gestation. I have never seen an unequivocal example of it; and Dr. Denman, in the course of his long experience, never met with a case. In some children, whose uterine system has been prematurely developed, menstruation has commenced at a very early period of life, and it has then sometimes been accompanied with chorea or hysteria.

The function of menstruation is peculiar to the female of the human species, and, from the earliest historical records of our race, it is known that this function was performed periodically in the most remote ages as it is at the present time. The first appearance of the catamenia at the age of puberty, its suspension during pregnancy and lactation, and its cessation in advanced years, are circumstances which prove that it is intimately connected with the process of reproduction.

Some physiologists think that menstruation puts or preserves the uterus in a state fit for impregnation; but the function is never performed unless the uterus is previously in a healthy condition. It might be affirmed with equal truth, that the secretion of bile puts or preserves the liver in a healthy state; the urine, the kidneys; and the gastric fluid the coats of the stomach. That the uterus can be in a fit state for conception without menstruation is proved by this fact — that some women have become pregnant who have never menstruated, and many have conceived during suckling who have not menstruated since their previous conception, or even during successive pregnancies and the intervals of suckling.

Some have attributed menstruation to the influence of the moon, to the upright position of women, to the presence of an undue proportion of azote in the blood of the uterus, fermentation of the blood, sexual desire, and many other hypothetical causes. It has been referred with greater reason, since the days of Aristotle, to a periodical plethora of the vessels of the uterus — a *molimen*, irritation, or effort of the uterine system every month, but no adequate cause has been assigned for this. The sensations usually experienced at the time the catamenia are present, and the examination of the bodies of those who have died from disease during menstruation, prove that the uterine arteries and veins are then distended with blood. Blood is not unfrequently extravasated with the catamenial fluid, and if the uterus be examined during the monthly period, it is usually found to be larger and heavier than during the intervals of menstruation. That something more than a mere determination of blood to the uterine system is required for menstruation will appear from the fact that suppression of the catamenia is not unfrequently produced by unusual congestion of the uterine vessels, and that the obstruction is removed by the local abstraction of blood.

That the determination of blood which takes place to the uterine system every month, and that all the phenomena of menstruation, depend upon the ovaria, and that at each period a Graafian vesicle bursts and its contents escape, is rendered extremely probable by the following facts: —

If the ovaria are wanting, or removed artificially, or have their healthy structure destroyed by disease, menstruation either never commences, or it entirely ceases. The case of a young woman who died at the age of 29, in whom the ovaria were wanting, was published by Mr. Charles Pears, in the Philosophical Transactions for 1805, and the following appearances have been recorded: — "Having ceased to grow at ten years of age, she was in stature not more than four feet six inches high. The breadth across the shoulders was as much as fourteen inches, but her pelvis measured only nine inches from the ossa ilia to the sacrum; her breasts and nipples never enlarged more than in the male subject. She never menstruated, there was no appearance of hair on the pubes, nor were there any indications of puberty, in mind or body, at twenty-nine years of age."

In the young woman whose ovaria were extirpated by Mr. Pott, in an operation for inguinal hernia, the voice became hoarse, the mammæ shrunk, and hair appeared on the chin and upper lip. Before the operation, this female was stout, large-breasted, and menstruated regularly.

Menstruation disappears if the structure of both ovaria be destroyed by any disease. In ovarian dropsy, if one ovary only be affected, menstruation continues until the powers of the constitution are greatly impaired, but if the disease exists in both ovaria from the beginning, the function is soon interrupted. The same effect is produced if the structure of the ovaria be disorganised by any other disease. A woman, aged 21, died in 1836, in St. George's Hospital, from tubercular phthisis, and both ovaria and fallopian tubes were completely changed by scrofulous disease. She never menstruated, and the uterus was like the uterus of a child, with a long neck and small body. In many young women who die of chronic disease, the ovaria are flaccid, and extremdly small. Something not very dissimilar to these effects in the human subject when the ovaria have been removed, has been observed by Mr. Yarrell in birds. He has shown that where there is a shrinking and shrivelling of the ovaria from disease in young birds, the hen bird, in many instances, assumes the plumage of the male. Thus, in several mules (hen birds with male plumage) the ovarium has been found variously diseased: sometimes the oviducts appear to have been inflamed, and adhesion to have taken place between their opposite sides, so that they become obliterated; at other times the ovaria are shrivelled, and of a black colour, and appear as if they had never been in progress to maturity. This black colour also pervades the oviduct, both is smaller than natural, and often impervious in some part. In old birds it might fairly have been alleged that the destruction of the ovarium and the change of plumage followed only the general obliteration induced by age, and that the one was not dependent on the other: but the fact that destruction by disease of the ovarium, in the young bird, induces a similar change, and the destruction of the oviduct by art being followed by an alteration, incomplete indeed, but, in many respects, resembling the one mentioned, sets the question at rest.

In cases where the uterus has been wanting, and the ovaria have been present and fully formed, women have usually experienced violent pains within the pelvis every month, and all the symptoms of menstruation have been present except the discharge.

In 1831, I saw a case, with Dr. Girdwood, in which there appeared to be a deficiency of the uterus, and an effort at menstruation every monthly period. The woman was 25 years of age, and had been married two years, though she had never menstruated. Every month there was great pain in the region of the pelvis, which lasted for several days, and then went off, without any menstrual discharge taking place. The mammæ and external sexual organs were fully developed. On examination at the posterior part of the vagina the finger readily passed into a short cul-de-sac, about an inch and a half in length, but there was no uterus above.

Dr. Stein related a case several years ago to a medical society in Berlin, of a married lady, æt. 24, well formed, and the mammæ fully developed, whose vagina was found imperforated; and in performing the necessary operation, no uterus could be discovered, but its place was supplied by a soft mass of cellular tissue. She had never menstruated, though there was a regular effort at each catamenial period. Other cases similar to these have been recorded by authors. One very distinct case of this kind came under the observation of Dr. Elliotson and Mr. Cline; there was no uterus, but there was excruciating pain about the pelvis every month: the ovaria had certainly been developed.

On the 11th of March, 1831, I examined the body of a young woman who died, during menstruation, from inflammation of the median basilic vein. The left ovarium was larger than the right, and at one point a small circular opening, with a thin irregular edge, was observed in the peritoneal coat, which led to a cavity of no great depth in the ovarium. Around the opening, to an extent of three or four lines, the surface of the ovarium was of a bright red colour, and considerably elevated above the surrounding part of the peritoneal coat. On cutting into the ovarium, its substance around the opening and depression was vascular, and several Graafian vesicles, of different sizes, were observed. The right ovarium was in the ordinary state. Both fallopian tubes were intensely red and swollen, and their cavities were filled with what appeared to be menstrual fluid. The lining membrane of the uterus was coated with the same fluid, and the parietes were soft and vascular. The size of the uterus was not increased. I pointed out this opening in the peritoneum of the ovary, which I accidentally observed, to Dr. Girdwood and Dr. Prout, and suspected that there was some relation between this and the state of the uterus. At this time I had not seen the human ovum in the Graafian vesicle before impregnation, and was not then aware that cicatrices are never present on the surface of the ovaria before menstruation had commenced.

In the autumn of 1831, Dr. John Prout saw a woman, under 20 years of age, who died suddenly from acute inflammation of the lungs while menstruating. He examined the body, and brought the uterine organs to me, having taken the greatest care that they should not suffer any force during their removal from the pelvis. A red, soft, elevated portion of the right ovarium was also here observed, and at one part the peritoneal coat, to a small extent, had been removed. The edge of the opening was extremely thin and irregular; and in the substance of the ovarium, under the opening, was an enlarged Graafian vesicle, filled with transparent fluid. Numerous small bloodvessels were seen running along the peritoneal coat of the ovary to the opening. When the substance of the ovarium was laid open, several vesicles, of various sizes, and at different depths, were found imbedded in it. The left ovarium presented a natural appearance. The free extremities of the fallopian tubes were gorged with blood. Their cavities were filled with a red-coloured fluid. The uterus was not enlarged, but the parietes were unusually full of blood, and the lining membrane of the fundus was coated with menstrual fluid. A small coagulum of blood likewise adhered to the upper part of the uterus. I now felt convinced that there must be some connection between this state of the ovaria and menstruation, and mentioned the facts to Sir Astley Cooper.

On the 2d of July, 1832, Sir Astley sent me the ovarium of a woman who died from cholera while menstruating. The ovarium was much larger than natural, and at one point there was a small, irregular aperture in its peritoneal coat, through which a portion of a slender coagulum of blood was suspended. On cutting into the substance of the ovarium it was found to be occupied with three small cysts or cavities, one of which was filled with a clear, ropy fluid, another with semi-fluid blood, and the third, which communicated with the opening in the peritoneal coat of the ovarium, with a firm coagulum.

On the 18th of November, 1832, Dr. Girdwood and Mr. Webster removed the uterine organs from the body of a young woman who had died suddenly the preceding day when the catamenia were flowing. Both ovaria were remarkably large, and both fallopian tubes were red and turgid. The peritoneal coat of the left ovarium was perforated, at that extremity which was nearest to the uterus, by a circular opening, around which aperture, for several lines, the surface of the ovarium was slightly elevated, and of a bright scarlet colour. The margin of this opening was thin and smooth, and did not appear to have been produced by any external force. Its centre was slightly depressed below the level of the edges, but there was scarcely the appearance of a cavity beneath. The right ovarium was much larger than the left, and when cut into, a cyst or cavity was seen filled with half coagulated blood. The peritoneal coat of the ovarium was entire. The uterus was large, and when cut into appeared to contain an unusual quantity of blood. The inner membrane was of a bright red colour, and coated with a thin layer of catamenial fluid. Both fallopian tubes were red and turgid, and the anterior of the left was filled with menstrual fluid. The appearances now described have been very accurately represented by Mr. Joseph Perry in this drawing, which was made from the parts in the recent state.

On the 14th of January, 1837, a woman, thirty-seven years of age, who had long suffered from hysteria, died suddenly in St. George's Hospital, during menstruation. No morbid appearance was found to account for her death. A small, circular aperture was observed in the peritoneum of the left ovarium. This opening communicated with a cavity in the substance of the ovarium, which was surrounded with a soft yellow substance of an oval shape. In the preparation, you see the aperture in the peritoneal coat of the ovary, and the cavity with which it communicates. This aperture would probably not have been detected if the parts had not been covered with pure water when examined.

On the 31st of May, 1841, Mr. A. Shaw was present at the inspection of the body of a woman who died during menstruation in the Middlesex Hospital. In the right ovarium, he says, the appearance was presented of one of the Graafian vesicles having been recently ruptured. A part of the surface, of the size of a fourpenny piece, was distinguished by a dark stain upon it; and here the peritoneal coat was slightly elevated, and the ragged edges towards the centre of the stained spot were of a particularly black colour.

In Dr. Gendrin's Traité Philosophique de Médécine Pratique (1839) there is a description of the same state of the ovaria in five women who died during menstruation. In the first the left ovarium was vascular, and in the middle was an aperture about a line in diameter, with an irregular margin. Its cavity would have contained a hemp-seed, its walls were red, and it was obviously a ruptured Graafian vesicle. In the second case a small, circular, ragged opening led to a cavity two lines in diameter, the walls of which were of a bright red colour. In the fourth the right ovary had an aperture a line and a half in diameter, leading to a small cavity, with vascular walls. M. Negrier has given an account of similar appearances in the ovaria during menstruation, and in the figure I now show you is represented the ovarium of a young woman who died eight days after the catamenial period. It resembles exactly the drawing on the table, without the colouring. A warm controversy has been carried on between M. Negrier and Dr. Gendrin on the priority of the discovery, and they appear to have been wholly unaware, which adds much to the importance of their observations, that an account of precisely the same appearances had not only been published by me, seven years before, in the second volume of the Cyclopædia of Practical Medicine, but, fifty-eight years before, in the Philosophical Transactions, by Mr. Cruikshank. "I also have in my possession the uterus and ovaria of a young woman," he observes, "who died with the menses upon her: the external membranes of the ovaria are burst at one place, from whence I suspect an ovum escaped, descended through the tube to the uterus, and was washed off by the menstrual blood." There is no further observation made in this paper from which it can be inferred that Mr. Cruikshank supposed all the phenomena of menstruation to depend on this state of the ovaria. Even as early as 1672, it appears Kirkringius believed that ova were sometimes discharged from the ovaria during the monthly periods; for he says, "Aliquando fœminæ dejiciunt hæc ova, imprimis tempore menstruorum." I have not had time to examine the work of Kerkringius, to ascertain whether he states this from an actual examination of the ovaria of women who died during menstruation, or if he adopted the opinion on purely hypothetical grounds, as Dr. Power did, and stated in his Essay on the Periodical Discharge of the Human Female.

LECTURE V.

ON THE ANATOMY AND PHYSIOLOGY OF THE GRAVID UTERUS.

At the time of conception the whole uterine system is in a state of great nervous excitement and vascular congestion: the corpora fimbriata turn round to the ovaria, and the ovum, before or after escaping from the Graafian vesicle, and entering the canal of the fallopian tube to be conveyed to the uterus, is fecundated by the seminal fluid, which penetrates to the surface of the ovarium. Soon after this the corpus luteum begins to be formed in the ovarium, from which the fecundated ovum has been discharged. No opportunity has occurred of determining with certainty, in the human subject, when the ovum leaves the Graafian vesicle after conception — how many days it requires to pass along the fallopian tube — and what changes take place in the uterus before the ovum enters its cavity. Our knowledge of these subjects consists of inferences from observations made upon the lower animals soon after impregnation.

In fifty hours post coitum in the rabbit, De Graaf found the vesicles in the ovaria empty; but the ovum was not visible in the tube till seventy-two hours had elapsed. Haller saw the Graafian vesicle in the sheep ruptured two hours after, but he could not perceive the embryo in the uterus before the seventeenth day. Mr. Cruikshank opened a rabbit two hours after, and then the calyces or Graafian vesicles, which contained the ova, projected much above the surfaces of the ovaria, and some of the ruptured orifices were just visible; but in many of these calyces there was not the least vestige of an orifice. In another rabbit, opened the third day after impregnation, the appearances were the same, only the corpora lutea were larger, and no vestige of an ovum could be discovered, either in the tubes or horns of the uterus. Another rabbit was opened the fifth day after impregnation: the appearances were similar, only the corpora lutea were increased in bulk, and no ovum could be detected any where. A fourth female rabbit was opened on the eighth day: the ova were in the cavity of the uterus, and "projected through its substance" about the size of a large garden pea: the embryo was not visible, but it became so by dropping distilled vinegar over the spot where it was known to be. Another rabbit was opened on the ninth day, and the embryo was seen within its amnion. Some corpora lutea had cavities, others none, nor the least appearance of orifice. The corpora lutea kept increasing with the fœtus, were of a sand-red colour, and very vascular. Another rabbit was opened at six days and a half: there were ova in the horns of the uterus, which had just begun to fix, but did not adhere by vessels; they were much enlarged, compared with the sixth, and the side next the uterus had a round, rough spot in it: the chorion and amnion were almost in contact with one another: they were easily turned out of the uterus, which embraced them every where loosely but at the bottom; *corpora lutea* were now increased exceedingly in vascularity, and nourished by a large vessel running across the tubes. Mr. Cruikshank examined another rabbit at three days and a half: the ovaria had the appearance as if the ova had not yet gone out; however, many of them were found in the uterus, and many in the tubes. I got, he says, about six; others were lost, from the great difficulty in slitting up the fallopian tubes without bruising the ova: there were eight or nine corpora lutea in one ovarium, and two only in the other: on the side of the two, only one ovum was found, but twice as large as those on the other side. In another experiment at two days and a half, the ovaria were impregnated; but there were no ova in the tubes, nor orifices in the corpora lutea. Mr. Cruikshank inferred, from these and other observations on the doe, which were made with the greatest possible care, and of which an account is published in the Philosophical Transactions, 1797, that the ovum enters the uterus on the fourth day.

The same volume of the Philosophical Transactions contains the following account of some experiments made by Dr. Haighton, also upon the rabbit, soon after impregnation:—"Having procured several virgin rabbits in a fit state for impregnation, I admitted one of them to the male. Twelve hours after it was killed, and on examining the ovaries several of the vesicles evidently projected; they had lost their transparency, and were become opaque and red: when punctured, a fluid of the same colour escaped. I made sections through some of them; but at this early period, the corpora lutea, which are formed by a thickening of the parietes of the vesicles, were not very evident; I therefore determined to examine them in a more advanced state. Another rabbit being admitted to the male, I examined it twenty-four hours afterwards. The colour of the fluid contained in the vesicles was similar to that of the last experiment. The vesicles projected more evidently, and their thickened parietes, manifesting the commencement of corpora lutea, were become more apparent. I inspected the ovaries of another rabbit forty-eight hours post coitum. At this period the vesicles seemed to be in the very act of bursting; and a semi-transparent substance, of a mucus-like consistence, was beginning to protrude from some of them; others, indeed, were less advanced. The fimbriated extremities of the fallopian tubes were preparing to receive their contents, as appeared by their having quitted their usual position, and embraced the ovaries in such a degree that only a small portion could be seen until the tubes were taken away. Sections being made into the thickened vesicles, the formation of corpora lutea appeared to have made further advances. From the appearance of an incipient rupture of the vesicles in this experiment, it was but reasonable to expect that their contents would soon have escaped; but as my views were directed to the formation of a corpus luteum, I deferred the next examination to a more distant time. In two days and twelve hours after coition, I examined the ovaries of another rabbit. The fœtal rudiments had escaped; but the cavities of the ovarian vesicles had suffered but little diminution. Bristles were easily introduced by the ruptured orifices. In this experiment the advances towards the formation of a corpus luteum were such as the period of examination would naturally lead us to expect. The contents of the vesicles having escaped, it was but reasonable now to look forward to a speedy obliteration of the cavity. I therefore examined these parts under similar circumstances on the third, fourth, and fifth day. In the last experiment there was but little vestige of cavity; consequently the corpora lutea might be considered as perfectly formed." I quote these observations of Dr. Haighton because they have been often referred to, and not because any satisfactory conclusions can be drawn from them.

Kuhlemann found Graafian vesicles of the sheep to have burst at the end of the first day; and Hausmann found them nearly all burst in seventeen hours.

Dr. M. Barry examined rabbits four, six, eight, and eight and a half hours post coitum, and he found the ova still within the ovaria, and apparently not very near the time of their expulsion. A rabbit was examined at eleven hours, when the ova were found to have made their exit from that organ; and at ten hours, with the same result. Another was killed at nine hours; the ova were still within the ovaria, and their Graafian vesicles presented no decided indication of an approaching rupture; he says (in the Phil. Trans. for 1839), "I tried 9¼ hours, when the ova were again found within the ovaria; while in another instance at nine hours they had escaped. At length, after nearly a score of rabbits had been devoted to anatomical inspection, for the simple object of determining the condition in which the ovum leaves the ovary, the parts were found in a state precisely what I had so much desired to meet with; one of these animals, at ten hours, yielding me ten ova that had left the ovary and advanced an inch into the tube, and two others that were still in the ovary, but beyond all doubt on the point of following them."

During the three first months of pregnancy, the human ovarium, from which the fecundated ovum has been discharged, and which contains the corpus luteum, is readily distinguished from the other ovarium by its greater size and weight, and by a prominence on some part of its surface above the adjacent peritoneum. On the point of this projection, there is always a small, irregular depression or cavity where the peritoneum appears to have been torn. Numerous arteries and veins ramify around this prominence, and give it a red colour, like blood. On cutting open the ovarium in the long direction, the corpus luteum comes into view, which is of an oblong form, rather more than half an inch in length, and less than a quarter of an inch in thickness: it presents an entirely different appearance from the stroma of the ovary, and is wholly different from it in structure, and from every glandular part of the body. The corpus luteum is nothing but the empty Graafian vesicle which contained the ovum, surrounded by a layer of yellow granular substance which is formed subsequently to impregnation. The two coats of the Graafian vesicle are always enclosed within the yellow substance; and they can be separated from one another, and their existence as two distinct membranes as clearly demonstrated, as the amnion and the chorion. The innermost of these coats is smooth, and the outer layer rough and filamentous, and processes are sent out from this exterior layer, which penetrate the yellow substance to a considerable depth, and in some parts go quite through it to the stroma of the ovary. The cavity of the Graafian vesicle varies in size in different corpora lutea; in some it is entirely empty, in others it is filled with a serous fluid; but I have in no instance seen the cavity of the true corpus luteum filled with blood or "lymphy matter" of any description. The layer of yellow substance, which has, in the second month of pregnancy, a deep orange colour, is usually from a line to a line and a half in thickness, and when examined with a magnifier, appears to consist entirely of yellow granules contained in the cellular membrane, interposed between the outer surface of the Graafian vesicle and the stroma of the ovary. Bloodvessels pass through the yellow substance from the stroma of the ovary to the coats of the

Graafian vesicle. In some specimens of corpora lutea there is an irregular and unusually large quantity of yellow substance formed on one side of the Graafian vesicle, which causes it to press inward upon the cavity. The outer surface of the yellow matter is in immediate contact with the stroma of the ovary, which is sometimes closely condensed, so as to produce the appearance of a capsule around it. This condensed portion of the stroma of the ovary is often thicker than both coats of the Graafian vesicle, and the mouths of divided vesicles are distinctly perceptible in it, as in other parts of the substance of the ovary. In some specimens there is no condensation of the substance of the ovary around and in contact with the yellow matter, nor the slightest appearance of any capsule enclosing it.

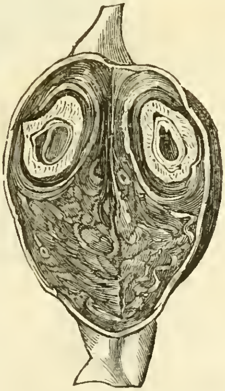
As gestation advances, the corpus luteum gradually diminishes in size, the deep yellow colour fades, the coats of the Graafian vesicle contract, and in the fifth month its cavity is almost obliterated. In the seventh and remaining months of pregnancy, there is no cavity within the corpus luteum ; the coats of the Graafian vesicle have contracted still further, and assumed a white, membranous appearance, with small processes passing outward through the yellow matter, somewhat like radii from the centre of a circle. A still further diminution takes place in its size, and in three or four months after delivery the yellow matter and coats of the Graafian vesicle have been entirely removed by absorption from the ovary ; and except a small depression on the surface where the prominence had at first existed, and a slight condensation of the substance of the ovary beneath, there is no vestige left of the corpus luteum. As these changes continue to go on in the Graafian vesicle, and around it, subsequently to the discharge of the ovum and its other contents, they probably contribute, or are the means which nature employs, to fill up the cavity thus suddenly formed in the ovarium, and to promote the contraction and absorption of the coats of the vesicle after the performance of its proper function, and the necessity for its removal, has occurred — a process analogous to the conversion of the umbilical vessels, for example, into cellular tissue after their functions have ceased.

A corpus luteum is invariably formed in the ovarium after conception, and two or three where there are twins or triplets. Not unfrequently two corpora lutea are present in the ovaria where there is only one ovum within the uterus. I found a perfect corpus luteum in the ovary of a woman who died from inflammation of the uterus soon after the expulsion of a mass of serous cysts, or hydatids, as they are called, from its cavity. Corpora lutea, such as have now been described, may be regarded as furnishing the most unequivocal proof of impregnation, but it is necessary to know that conception may have taken place, and that the corpus luteum may be so small and so imperfectly formed as to be in a great degree destitute of its genuine and distinctive characters.

In the ovaria of women who have never been pregnant, yellow, oval-shaped bodies are sometimes found which it is difficult to distinguish from true corpora lutea. These false corpora lutea most frequently result from blood effused into the cavities of the Graafian vesicles, as Dr. Montgomery has observed, which assumes a fawn hue as the colouring matter disappears by absorption, and undergoes various changes similar to those which are observed to take place in coagula of blood formed in the cavities of veins from inflammation of the coats, or mechanical obstruction. After a longer or shorter period, the blood is entirely removed, and the coats of the vesicle contract, and often assume a brown, yellow, or black colour. In these false corpora lutea the yellow substance is contained within, or attached to, the inner surface of the Graafian vesicle, and does not surround it, as is the case in true corpora lutea. In advanced life a thickening of the layers of the Graafian vesicle not unfrequently gives rise to appearances resembling corpora lutea. These, and all other corpora lutea, are generally, but not invariably, found more or less deeply imbedded in the substance of the ovarium, or if they are near the surface, they are most frequently not in actual contact with the peritoneum, but have a small portion of stroma intervening. If there is a cicatrix over these, it has a more irregular form than in the small, circular depression on the apex of the true corpus luteum.

In a specimen of false corpus luteum which I examined with Mr. Wharton Jones, not long since, there was yellow matter deposited in the coats of the Graafian vesicle, which were spongy and thickened. The cavity of the vesicle was distended with coagulated blood. The inner layer had a peculiar wrinkled appearance, similar to what Von Baer has represented in his figure of the true corpus luteum, and we could not help suspecting that this puckering had led him to entertain the erroneous views, respecting the true corpus luteum, which he has promulgated in his work De Ovi Mammalium et Hominis Genesi; in fact, that he mistook a false for a true corpus luteum.

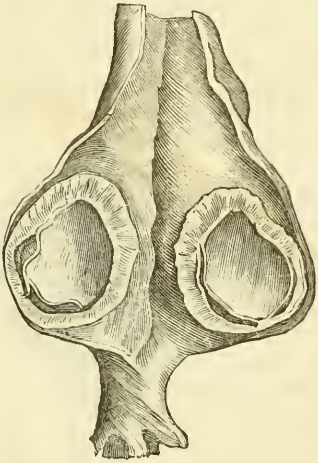
Fig. 3.



There are upon the table five specimens of the true corpus luteum in the second and third months of pregnancy; and two in the fourth, and several others in the seventh and subsequent months of gestation, and one three months after delivery. The specimen before me was obtained from the body of a woman, who died on the 11th of July, 1838, in St. George's Hospital, in the second month of pregnancy. The appearance of the ovum made this certain. The left ovarium contained the corpus luteum, which was larger than the other, and had a considerable prominence on its convex edge, around which were seen ramifying a number of minute arteries and veins. There was a small, circular depression at the point of this prominence, but a bristle could not be made to pass through it into the central part of the ovary. On cutting open the ovarium the corpus luteum presented itself of an oval shape, and of a deep or rather light orange colour, with the Graafian vesicle enclosed within it, the coats being thickened and contracted. The cavity was empty. With little difficulty, while the parts were under alcohol, I succeeded in separating one-half of the vesicle into two distinct layers, which are clearly seen in the preparation ; a bristle being interposed between them. If you look carefully through a magnifier at these two layers of the Graafian vesicle, and at the drawing, I think you will be satisfied, as many anatomists who have done so have been, that this internal membrane is evidently something very different from " a layer of coagulable lymph," as has been asserted. The outer surface of the Graafian vesicle is so loosely attached by cellular membrane to the yellow matter that it can easily be separated from it. Around the outer surface of the yellow matter, and completely investing it, there is a white layer varying in thickness, the outer part of which loses itself in the substance of the ovarium, of which it appears to form a part and to be similar in structure. The inner portion of this white layer, which appears to be condensed stroma, is separable on the one hand from the yellow matter, and on the other from the substance of the ovarium, so as to give the appearance of a distinct membrane, considerably exceeding in thickness both layers of the Graafian vesicle. This preparation first induced me to believe that both layers of the Graafian vesicle are enclosed within the yellow matter of the corpus luteum. (Fig. 3.)

The correctness of this view was soon placed beyond all doubt, by the specimen I now show you of corpus luteum in the second month of pregnancy. It is here most evident that there is no capsule interposed between the yellow matter and the stroma of the ovary, and that both layers of the Graafian vesicle are enclosed within the yellow matter. On one side the coats have been separated, and a bristle placed between them, that they may be more clearly seen. The separation of the coats was effected with greater difficulty than in the other specimen ; and the fact rendered still more obvious that the inner coat was not a layer of coagulable lymph. Sir Astley Cooper and Mr. Wharton Jones examined this preparation in the most careful manner, and satisfied themselves that the account I have given of the corpus luteum is correct, and to Mr. Jones I am indebted

Fig. 4.

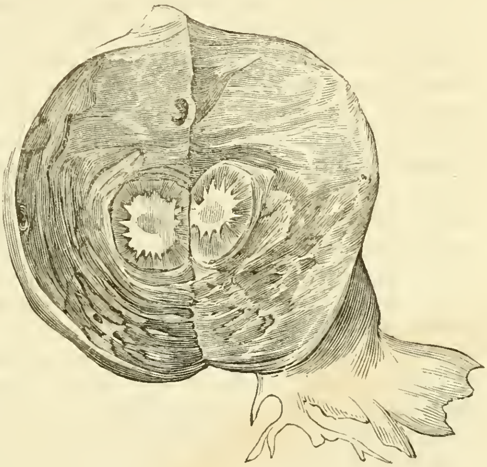


for this accurate drawing, which has been engraved in the 22d volume of the Medico-Chirurgical Transactions. (Fig. 4.)

On the 25th of February, 1840, I examined, with Mr. Wharton Jones, this corpus luteum, which was removed from the body of a woman who died in the fourth month of her pregnancy. The yellow matter was here likewise in immediate contact with the stroma of the ovary, and had no capsule around it; within the yellow matter, and loosely adhering to it, was seen the Graafian vesicle, like a small, white cyst. When this cyst was cut open under water, there was seen a very small cavity in the centre. There were two perfectly distinct coats, which formed the walls of this cyst, and these two layers were separated by a less dense structure, apparently cellular membrane, of a bluish or milky appearance.

In the preparation which I now exhibit of the corpus luteum in the seventh month, there is no cavity in the centre, and the coats of the Graafian vesicle present a thin, membranous appearance with bands running into the yellow matter, the colour of which is very pale. The whole corpus luteum is much reduced in size. (Fig. 5.)

Fig. 5.



In the preparation now before you there is nothing unusual visible in the ovary, except a slight depression on the surface, and a white line running into the stroma to the extent of about a quarter of an inch. This is the ovary of a woman who died three months after delivery, and which contained the corpus luteum.

The corpora lutea of the sheep, in these four specimens, present a very different appearance from human corpora lutea. They resemble soft, oblong, vascular tumours, imbedded in the substance of the ovaria, and projecting, like small nipples, considerably beyond the surface of the organs. There is a smooth, circular depression on the projecting point of each of them, but there is not the slightest appearance of a cavity in their centre, nor is there a distinct capsule, like the outer layer of the Graafian vesicle, surrounding them.

The corpus luteum of the cow, about the fourth month of pregnancy, forms a large mass in the ovary about an inch in diameter, and projects still more than in the sheep. In the specimen on the table, the bloodvessels of which have been injected, there is a smooth, circular depression on the most projecting part, but there is no cavity in the centre, as in the human corpus luteum. Between the stroma of the ovary and the corpus luteum there is only a thin layer of cellular membrane interposed. The absence of the central cyst and cavity in these corpora lutea renders it extremely probable that the Graafian vesicles had been entirely extruded from the ovaria after impregnation; and the same circumstance must have occurred in some of the ovaria in the rabbit, described by Mr. Cruikshank. On examining the corpora lutea of the sheep, cow, and mare, you will have great difficulty, I think, in believing that they can possibly be formed by a separation of their two coats, and the sudden formation between them of the peculiar substance constituting the corpus luteum. It seems contrary to all the sound principles of physiology to suppose that the coats of the Graafian vesicle which are about to be removed from the ovary as extraneous matters, should suddenly lose their natural appearance, and grow into these great vascular and granular masses.

The human corpus luteum was first described by De Graaf in 1672. The account he has given of it is so good that I cannot forbear quoting it.

"Quæ verò secundum naturam aliquando tantum in mulierum testibus inveniuntur; sunt globuli, qui glandularum conglomeratarum adinstar ex multis particulis à centro ad circumferentiam recto quasi ductu tendentibus conflantur, et propriâ membranâ obvolvuntur. Hos globulos non omni tempore in fœmellarum testiculis existere dicimus: quia post coitum tantum in illis deteguntur, unus aut plures, prout animal ex illo congressu unum aut plures fœtus in lucem edet. Neque illi adhuc in omnibus aut ejusdem generis animalibus semper eodem modo sese habent, in vaccis enim flavum, in ovibus rubrum, in aliis cineritium colorem sortiuntur: præterea aliquot post coitum diebus tenuiori substantia prœditi sunt, et in sui medio limpidum liquorem membranâ inclusum continent, quo unà cum membranâ foras propulso, exigua solum in iis capacitas superat, quœ sensim ita aboletur ut postremis gestationis mensibus ex solidâ tantum substantiâ conflare videantur: enixo jam imminuuntur, ac tandem evanescunt." It was afterwards similarly described by Rœderer, Dr. W. Hunter, Haller, and others. Professor Baer is of opinion that the corpus luteum is formed in all animals by a thickening of the inner membrane of the Graafian vesicle. Dr. Montgomery believes the corpus luteum to be surrounded externally by the outer membrane of the Graafian vesicle, whilst its cavity is lined by the inner membrane of this vesicle. Dr. Paterson has adopted the same opinion. The first two figures accompanying his paper in the Edinburgh Medical and Surgical Journal evidently represent false corpora lutea. They have not one of the characters of the true corpus luteum. Fig. 2 shows nothing but a clot of blood within the Graafian vesicle. There was no ovum detected in the uterus, although minutely and carefully examined: "indeed," he states, "although this person had conceived, there can be little doubt, from the puckered and contracted appearance of the fimbriated extremities of the fallopian tube, which could hardly admit of a small probe to enter, that no ovum could have passed into them." This woman had been married eight years, and had had no family, which, with other circumstances, makes it certain that she had never been pregnant; and that a true corpus luteum could not exist in the ovarium. "These figures," Dr. Paterson says, "are intended to represent the external and internal appearance of a corpus luteum, a very short time after the rupture of the Graafian vesicle." "An interesting specimen of a corpus luteum," observes Dr. Paterson, "a very little older than the above described one, occurred to Dr. John Reid, lately, in the Royal Infirmary: the patient, a young female about 18 or 19 years of age, came into the house labouring under peritonitis, of which she died on the third day after her admission. The left ovary presented a corpus luteum, with its edge about two or three lines thick, beautifully plicated, and of an intensely yellow colour; the centre was filled with a coagulum of blood. I had not an opportunity of examining this specimen till after its immersion in spirits: the plicated margin was then quite distinct, but the central coagulum was gone. The uterus of this girl was also slightly enlarged, and contained a soft, decidual membrane." As Dr. Paterson does not state that an ovum was detected, I am entitled to presume that it was not, and that the proof of conception having taken place was wanting. The presence of a membrane in the uterus, like the decidua, has been met with when there was no pregnancy, or has been expelled from the uterus in dysmenorrhœa. In a court of law the evidence of pregnancy here would have been wholly insufficient. No figure is given of this corpus luteum, and no inference can be drawn from the description of it.

The third figure represents the appearances presented by an ovarium removed from the body of a woman who died of chronic disease of the brain. Here also no ovum could be detected by Dr. Paterson in the uterus, upon minute microscopic examination, to determine that pregnancy had actually taken place; although he infers "that impregnation had occurred from a fortnight to three weeks before death." If you examine this figure, you will see that there is no capsule interposed between the yellow matter and stroma of the ovary; and the same is the case with the fourth figure, which represents a true corpus luteum in the second month of pregnancy. Dr. Allen Thomson says, in his description of the corpus luteum, that a cavity existed in the interior of this corpus luteum similar to what is seen in all true corpora lutea; but Dr. Paterson says this statement is erroneous, and its centre was filled up with a reddish-grey coloured fibrinous mass." In Fig. 5 the Graafian vesicle is seen distinctly within the yellow matter; and this, you see, is in immediate contact with the stroma of the ovary; although Dr. Paterson says, in his description of it, that "external to the yellow body was also a firm membrane."

These are all the observations on the true corpus luteum contained in Dr. Paterson's paper, and I leave you to judge whether they are sufficiently numerous to warrant him in stating that he had "had *many* opportunities of observing that the proper substance of the corpus luteum was covered by two membranes." This inference, indeed, does not appear to have been drawn from an examination of human corpora lutea, but from those of the cow. "Any one may satisfy himself of this," he says, "by a very simple experiment. Let him procure the ovary of a cow containing the corpus luteum. In this animal the parts are so large as to be easily distinguished. An incision is to be carefully made through the peritoneum and proper tunic of the ovary; and then, turning these edges aside, no difficulty will be experienced in turning out the corpus luteum from the ovary. On examining it we find that it is still covered with its cellular envelope. Upon gently cutting through this, and reflecting it, we find that the orange-coloured corpus luteum is still covered by a proper tunic; and when this is cut through, and elevated with the forceps, the naked corpus luteum comes immediately into view. Now what else can this second tunic be but the external membrane of the Graafian vesicle?" Look once more carefully at this corpus luteum of the cow, will all its bloodvessels injected, and see whether it agrees with the description I have now read.

Before taking leave of this subject, the importance of which you will hereafter be more aware of than now, I ought to state that Dr. Martin Barry thinks the corpus luteum is formed by a development of the outer layer of the Graafian vesicle. Professor Owen also thinks that the yellow substance is formed in this way, and that the inner layer is compressed by the outer, and that the cavity in the centre of the corpus luteum is anormal.

LECTURE VI.

ON THE STATE OF THE UTERUS IN THE FIRST MONTH AFTER CONCEPTION.

Anatomists have enjoyed few opportunities of examining the contents of the human gravid uterus soon after conception. Though Dr. W. Hunter was nearly forty years in London, he states that "the most early case of pregnancy which he ever had an opportunity of examining in the dead body was of three complete months."

Mr. Ogle has given an account, in the second volume of the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, of the appearances which Mr. J. Hunter saw in the examination of a young woman who poisoned herself when the period of conception, he believed, could not exceed a month; and probably was much within that time. The arteries of the uterus were injected, and the smaller vessels filled to so great a degree of minuteness, that the whole surface became extremely red. The cervix uteri and os tincæ were of their natural size; but the body, or that portion of the uterus next the fundus, was a little enlarged, and more prominent externally in the middle. The spermatic vessels were also enlarged. On cutting into the substance of the uterus, it had more of a laminated structure than in the unimpregnated state. This appearance of lamellæ was seen, upon examination, to be formed by veins somewhat enlarged, compressed, and transversely divided. The uterus was unusually soft in texture, and terminated on the internal surface in a pulpy substance. The bloodvessels of the uterus passed into and ramified upon this pulpy substance, which was continued across at the cervix uteri, so as to make the cavity of the uterus a circumscribed bag; and at this part the pulpy substance was so thin as to resemble the retina. This cavity had a smooth but irregular internal surface, and the pulpy substance upon which it was formed was evidently coagulated blood, and varied in its thickness in different parts. Upon a longitudinal section of the uterus, the posterior part of the coagulum, which was the thickest, was nearly half an inch; where it terminated towards the cervix, it was pendulous and unattached. There were also several loose processes, all turned toward the cervix; one of them very thin, as broad as a silver penny, and only attached by one edge to the fundus near the opening of the right fallopian tube. On slitting opon the fallopian tubes, the coagulum was found to pass some way into them, and to extend more than half an inch on the left side, which had the corpus luteum. The coagulum was thickest at the orifice of the tube, and there adhered to the inner surface for the eighth part of an inch; beyond which it became smaller, and terminated in a point. In the left tube the coagulum was in two places coiled or folded upon itself, as if thrown back by the action of the tube. The portions of the coagulum at the orifices of the tubes were hollow. When the inner surface of the cavity of the uterus was examined with a magnifying glass, it was found extremely vascular, and dotted with innumerable whitish spots too small to be seen with the naked eye. The uterus was opened in a basin of clear water. The incision was conducted with great circumspection, and very slowly continued, till the whole of its cavity was exposed. Every part of the internal surface was minutely examined with magnifying glasses; but in no situation was there any thing resembling an embryo to be found.

It has been inferred from this dissection, that certain changes always take place in the uterus previous to the reception of the ovum, and that the embryo does not acquire a visible form for some time after these changes have been made.

As the ovum was not discovered in the tube, no conclusion whatever can be drawn from this dissection respecting the condition of the uterus before the ovum enters its cavity. The ovum, indeed, might have entered, and also made its exit from the cavity of the uterus before the woman died, or before those changes in the uterus above described took place; but the probability is, that, though not detected, the ovum actually was in the uterus.

Sir E. Home has given the following description of the uterus and ovaria of a young woman who died, as he supposed, eight days after conception, and which has often been referred to by authors:—The right ovarium had a small, torn orifice upon the most prominent part of its external surface, which led to a cavity filled up with coagulated blood, and surrounded by a yellowish, organised structure. The os uteri was completely closed with a firm gelatinous matter, and the two orifices at the superior angles of the uterus, by which this viscus communicates with the fallopian tubes, were open. The inner surface of the uterus was coagulable lymph, among the fibres of which, near the cervix, was the ovum. It was oval-shaped, and though at first partly transparent, became opaque from the action of the spirit. It was immediately taken to Mr. Bauer, who compared it to the egg of an insect, and succeeded in pointing out the effects of impregnation in two projecting points, the rudiments of the heart and brain.

It is impossible to admit that the rudiments of the heart and brain of the embryo could have been developed at this time, and been seen, without the amnion, chorion, vesicula umbilicalis, and the different parts of an organised deciduous membrane; and had these existed they could not have escaped some notice. I have no doubt that the right ovarium contained a false corpus luteum, and that the appearances here so generally and vaguely described in the uterus were not the result of conception. Sir E. Home attempted, from this case, to revive an erroneous opinion of Malpighi, viz., that the corpus luteum is not the effect of impregnation, but a glandular structure in which the ovum is formed.

Dr. Burns states that he has examined very carefully three uteri within the first month, and was not able to discover either ovum or fœtus.

Mr. Alexander Shaw has furnished me with the following description of three specimens of the uterine organs after recent impregnation, which were in the collection of Sir Charles Bell. In all of these the orifices of the fallopian tubes were visible at each angle of the fundus, or presented the same appearances which they exhibit in the unimpregnated condition of the organ. The woman from whom the first preparation was taken had her leg crushed by the wheel of a wagon. The limb was amputated on the fourteenth day after the accident. She had informed the nurse that she was in the sixth week of pregnancy. The uterus was nearly twice as large as it is in the unimpregnated state; and this organ, together with the ovaria, fallopian tubes, and alæ vespertilionis, were in a remarkable manner loaded with blood. The left ovarium had a more turgid appearance than the right; it contained a corpus luteum, and a bristle could be passed through the rent in the peritoneal covering at this part. The walls of the uterus were three-quarters of an inch in thickness; there was an accumulation of mucus in the cervix and os tincæ, and the glandulæ Nabothi were enlarged. An extremely vascular deciduous membrane lined the uterus. Its surface was villous and smooth in all its extent; it was confined to the body of the uterus. The uterus was dissected so as to expose the orifice of the left fallopian tube; that is, on the same side on which the corpus luteum was discovered. When the angle at which the tube enters was laid open, a distinct channel was seen formed in the deciduous membrane, and leading to the point where its opening is naturally found. This passage, and the opening into the tube, was free, so that a bristle could be introduced into the orifice, and met with no obstruction until it was fully inserted within the walls of the uterus. The ovum was not discovered.

The young woman from whom the next specimen was obtained poisoned herself. The uterus was increased in size, and its fundus uteri was turgid with blood. A deciduous membrane was seen occupying the body of the uterus. There was a firm plug of mucus contained in the cervix and os tincæ. The orifices of the tubes were visible at each angle of the fundus, or presented the same appearances which they exhibit in the unimpregnated state. A bristle could be introduced into them; but, as in the former preparation, owing to the narrowness of the canal, there was an obstruction when it arrived at the part where the tube is enclosed with the parietes. The corpus luteum was in the right ovary. The ovum was not detected.

The third specimen was removed from the body of a young woman who poisoned herself with sulphuric acid. The uterus was larger and softer than in the unimpregnated state. On slitting it open a gelatinous deposit was found in the cervix, and a deciduous membrane occupied the proper cavity. Adhering to the fleecy decidua, Sir Charles Bell found a small body, which he imagined might be the ovum. The orifices of the fallopian tubes, as they enter the cavity of the uterus, presented the same appearances which have been described in the two preceding preparations. The right ovarium contained the corpus luteum.

Baer examined the inner membrane of the uterus soon after supposed conception, and he says the villi were elongated, and between these, and passing over them, was an organised substance, evidently the deciduous membrane. The vessels of the uterus were continued into this substance, and formed a number of little hoops around the villi, and anastomosed with each other. The ovum was not discovered either in the uterus or tube.

E. Weber, in 1830, examined the uterus of a woman who committed suicide on the seventh or eighth day after impregnation was supposed to have taken place. The uterus, tubes, and ovaria, were enlarged and congested. One of the Graafian vesicles was burst, and a layer like organisable lymph, composed of little cylinders, covered and intervened between the enlarged villi of the internal membrane of the uterus. The ovum was not detected either in the uterus or tube. "These observations of Baer and Wagner are those (says Professor Wagner) that treat of the decidua at the earliest period of its existence, even before the entrance of the ovum into the uterus."

It is a remarkable circumstance, that in none of the preceding histories of the human uterus, soon after actual or supposed impregnation, was the ovum seen either in the tubes or in the uterus, and they furnish, therefore, no information respecting the state of the uterus before the entrance of the ovum. These dissections prove that all the bloodvessels of the uterus enlarge, and the different coats soften and are more easily separated soon after conception; that the inner surface becomes covered with a soft substance like coagulable lymph, or deciduous membrane; and that the cervix is closed by a viscid, gelatinous matter formed by the glands situated in it. They further demonstrate, that the fallopian tubes are open, and that these canals communicate with the cavity of the uterus, as they do before impregnation. The ovum, therefore, at first, must lie loose in the cavity of the uterus, like the ova of the lower animals, and have the power to attach itself to any point of the internal surface of the organ, and even to the circumference of the cervix.

In every case, observes Dr. Burns, the decidua, consisting of two layers, is completely formed before the ovum descends. When the embryo passes down through the tube, it is stopped when it reaches the uterus by the inner layer which goes across the aperture of the tube, and thus would be prevented from falling into the cavity of the uterus, even were it quite loose and unattached. By the growth of the embryo, and the enlargement of the membranes, this layer is distended, and made to encroach upon the cavity of the uterus, or, more correctly speaking, it grows with the ovum. This distention or growth gradually increases, until at last the whole of the cavity of the uterus is filled up, and the protruded portion of the inner layer of the decidua comes in contact with that portion of the uterus itself which remains attached to the outer layer. Breschet, Velpeau, and almost all the numerous recent writers on embryology, have repeated this statement.

Researches in regard to the state of the mucous membrane of the uterus after conception, says Wagner (1841), inform us that even before the arrival of the ovum within its cavity an exudation of an albuminous fluid takes place from its surface, which, soon acquiring consistency and the appearance of concrete fibrin, is gradually formed into a membrane, thin and delicate at first, but which continually increases in thickness, and finally presents a fac-simile or mould of the inner cavity of the uterus. This membrane even appears though the ovum never reaches the cavity of the uterus, but passes through the various stages of its evolution in the ovary, fallopian tube, or abdomen.

I believe this is the doctrine now taught in almost all the anatomical schools in this country and on the continent, although it is unsupported by a single observation, and is proved to be erroneous by all these dissections. There is no case, as far as I know, of early gestation, in which the fallopian tubes have been seen covered with decidua before the arrival of the ovum in the uterus; and you will soon be convinced that the decidua reflexa cannot be formed in the way this hypothesis supposes. This hypothesis, in fact, rests entirely upon certain appearances observed within the uterus in some cases of extra-uterine gestation, from which no inferences can be drawn which are applicable to ordinary pregnancy.

Dr. W. Hunter examined a case of fallopian tube gestation in which the uterus was enlarged, and the membrana decidua was distinctly seen lining the fundus uteri. From this appearance he inferred, that the decidua, or outer stratum of the secundines, belongs to the uterus, and not to the ovary, or that part of the conception which is brought from the ovum.

Although it be extremely probable, says Dr. Baillie, that the decidua begins to be formed at the time that the ovum passes into the cavity of the uterus, yet it is not absolutely necessary for the formation of the decidua that the ovum should reach that cavity. When an ovum grows in the ovarium or the fallopian tube, the decidua is both formed in the uterus, and the uterus is considerably enlarged, so as to undergo, to a certain degree, changes exactly similar to those which take place in natural pregnancy.

Though the fœtus be extra-uterine, observes Dr. Denman, the uterus becomes considerably enlarged, and performs its proper office by providing the efflorescent or deciduous membrane for the reception of the ovum.

Dr. Burns says, it is curious to observe that invariably the uterus enlarges considerably, and "in every instance decidua is formed." Meckel, Breschet, Velpeau, and every other author with whose writings I am acquainted, have given the same opinion on this subject; and not only has this been considered an undoubted fact in all cases of extra-uterine gestation, but in common pregnancy it has been supposed that a deciduous membrane is invariably formed within the uterus, before the ovum enters its cavity. That the decidua is not formed within the uterus in all, or in any cases of extra-uterine gestation, the following facts seem to prove: —

A lady died suddenly, in 1829, from internal hemorrhage, produced by rupture of the right fallopian tube, which contained an ovum. On opening any tube, and examining the different parts of the ovum, I found a deciduous membrane everywhere surrounding the chorion, and closely adhering to the inner surface of the tube, as the decidua usually does to the lining membrane of the uterus in ordinary gestation. Within the decidua, the chorion, placenta, amnion, and embryo, were distinctly seen. The uterus was larger than natural, and there was not the slightest trace of any decidua lining its internal membrane. Had it existed, or anything resembling a layer of coagulable lymph, it could not possibly have avoided detection. The lining membrane is now in precisely the same state it then was; and by examining the preparation, you will see that there is a decidua surrounding the ovum in the tube, but not a vestige of decidua within the uterus. Dr. Merriman was present at the examination of the body of the lady from whom this specimen was obtained; and it led me first to doubt the correctness of Dr. Burns's statement, that in every instance decidua is formed in the uterus. I soon after this found that in a case recorded by Mr. Langstaff, in the Medico-Chirurgical Transactions, and in another by Velpeau, there was no deciduous membrane found within the uterus.

On the 18th of July, 1836, a patient of Dr. Stodart's, after suffering for some time with symptoms of inflammation and retroversion of the uterus, was seized with great faintness, and soon expired. A large quantity of fluid blood was found in the abdominal cavity, and the right fallopian tube, which contained an ovum of ten or twelve weeks, was extensively lacerated near the fimbriated extremity. On removing the uterus and its appendages from the body, and carefully examining the ovum contained in the right fallopian tube, it was evident that a deciduous membrane every where surrounded the chorion, and adhered to the inner surface of the tube. The placenta, which was situated at the extremity of the ovum nearest the uterus, was seen covered with the decidua; and coagula of the fibrin of the blood were traced from the interstices of the placenta, through the decidua into veins in the thickened muscular coat of the tube. The cells of the chorion were full of coagula of fibrin. Between the chorion and amnion, near the placenta, was seen the vesicula umbilicalis, with its slender peduncle proceeding to the umbilical cord. The appearance of the amnion, cord, and embryo, was perfectly natural. The uterus was considerably enlarged, and its inner surface was coated with a very thick layer of a yellowish-white, soft substance, like common adipose matter, or lard, and bearing not the most distant resemblance to deciduous membrane. There was no trace of any vessel in this thick coating. The orifice and neck of the uterus were closed with the usual viscid substance formed by the Nabothean glands. The appearances are well preserved in the preparation of the parts before you. You observe there is a perfect ovum within the tube, and that the vesicula umbilicalis floats about in the spirit when it is moved. M. Velpeau, I think, states that he has a preparation in which this is present; but I have never seen one, except this, in which the vesicula umbilicalis was in the tube. The soft, thick substance lining the uterus is, you see, entirely different from the deciduous membrane of this ovum, which was expelled in abortion at the end of the second month of pregnancy.

But these are not the only cases of extra-uterine gestation, in which there was no decidua within the uterus. Dr. Blundell states that he "has seen two tubal cases in which the decidua was wanting. Dr. Murphy has described a case in the Dublin Journal, for 1838, in which there was no decidua within the uterus. It was not ascertained whether in these cases there was a decidua in the tube, but there can be no doubt of the fact, for the decidua is as essential to the embryo in the early months of pregnancy, as the placenta is to the fœtus in advanced gestation. In a case which occurred to M. Chaussier in 1814, the decidua surrounded the ovum in the tube. Mr. Streeter has pointed out to me a case of extra-uterine gestation (tubal), the history of which has been recorded by Dr. Cooksworthy, in the first vol. of Dr. Johnson's Medico-Chirurgical Journal, in which "there was no membrana decidua" within the uterus. Mr. O. Clayton has related, in the Lancet, very recently, another instance of tubal gestation, in which there was no true decidua in the uterus, but a membrane which had a considerable resemblance to it at first sight, and might have been mistaken for decidua, as many membranes have been which have been expelled from the uterus during painful menstruation.

From these facts we may conclude, that the decidua is not invariably, if ever, formed within the uterus in cases of extra-uterine gestation, and that if it were so, further evidence would still be required to prove that an organised membrane always lines the uterus, like a shut sac, before the ovum enters its cavity after common impregnation.

LECTURE VII.

ON THE HUMAN OVUM IN THE FIRST MONTH OF PREGNANCY.

The human embryo is enclosed within a sac, to which it is attached by the umbilical cord. This sac is composed of three distinct membranes — the amnion, the chorion, and the decidua. The decidua is the outer membrane, the chorion is the middle, and the amnion the inner. If you cut open a gravid uterus in the earlier months of pregnancy, as in this preparation, you will observe the decidua adhering to its whole internal surface. On dividing this membrane, you will then see the entire space between the decidua and membrane of the chorion occupied all around the ovum by the placenta and villi of the chorion; and on laying open the membrane of the chorion, from the outer surface of which all the villi extend to the decidua, the amnion will come into view, which immediately encloses the embryo and liquor amnii, and forms the sheath or covering of the umbilical cord: you will also see the vesicula umbilicalis, situated between the amnion and chorion, a short distance from the insertion of the umbilical cord into the membranes.

There are upwards of thirty human ova of different ages, from the latter part of the first month to the commencement of the fourth, now placed upon the table before you. There are only three of these which undoubtedly belong to the first month, but none of them are perfect ova, the chorion and its contents in all of them having been expelled, and the diciduous membranes left within the uterus.

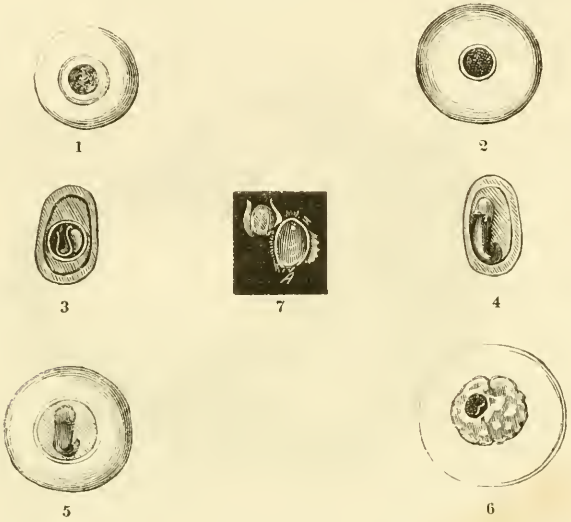
In the first specimen, the age of which could hardly have exceeded twenty days, and which is about the size of a common hazel-nut, you see the whole is covered with the villi of the chorion. On one side the villi are more luxuriant than on the other, but there is no part of the membrane of the chorion smooth, or destitute of villi. Within the cavity of the chorion which has been laid open, you see the vesicula umbilicalis about the size of a small pea, and closely adhering to it is the embryo, enclosed within the transparent amnion, and which is rather smaller than the vesicle. The embryo is not quite two lines in length, and is much bent. It resembles exactly this figure of a very young embryo contained in Soemmering's plates. There is a space between the amnion and the inner surface of the chorion which is occupied by a soft reticular texture, in which is imbedded the vesicula umbilicalis. This is probably one of the most healthy human ova which has yet been examined. In a second specimen of the human ovum nearly of the same age, which was expelled in abortion, the entire surface of the chorion was covered with villi. The cavity of the chorion likewise contained the vesicula umbilicalis and amnion, but there is only an opaque spot seen within the amnion, and no distinct embryo. In a third ovum belonging also to the latter part of the first month, you see there is no difference between the appearance presented by the villi of the chorion, in this and in the other two specimens which you have now examined. But the cavity of the chorion contained only the vesicula umbilicalis, which was imbedded in the common soft reticular texture always found in this part of the ovum. By the slightest touch the vesicula umbilicalis was detached from the chorion, and it now floats loosely in the spirit of the preparation. There was no embryo or amnion, that I could discover, within the chorion.

M. Velpeau has given the representation of an ovum without the decidua which he believed to be only eight or twelve days old. The whole was covered with villi of the chorion, and was about the size of a common pea. There was neither embryo, amnion, nor vesicula umbilicalis, contained within the cavity of the chorion. He has also given a figure to represent another ovum, the age of which he fixes at twelve days. It had the same size and appearance externally as the other, and within the chorion he saw the embryo and vesicula umbilicalis imbedded in a soft reticular texture which filled the greater part of the cavity of the chorion.

In the Philosophical Transactions for 1837, Mr. T. W. Jones has described a human ovum which was probably not more than three or four weeks old. On laying open the ovum, by carefully cutting and reversing the bald side of the chorion, the following appearances presented themselves. The whole cavity of the chorion was filled with a fine gelatinous cellular tissue, imbedded in which, towards one extremity of the ovum, was a small round body. It was evidently the vesicular blastoderma, or germinal membrane: on being taken out and examined by the microscope, it presented the same friable globular structure found in the vesicular blastoderma of the rabbit. There was no vitellary membrane to be seen. The chorion of this ovum was expelled with the decidua, and lay in the middle of one of the parietes of the decidua, rather near its upper edge, and was the size of a large pea. One side of the chorion was smooth, the other shaggy, with the villi of the chorion, which leads me to think that this ovum was not in a perfectly healthy condition, and that development had been arrested some time before its expulsion.

The subjoined figures (1 to 7) from Mr. T. W. Jones, represent the natural appearance of this ovum and the ova of the mammifera, after impregnation.

Fig. 6.[*]



Prof. Wagner has described and given a representation of a normal ovum of the third week, covered by the uterine decidua, and which measured about seven lines in length. The subjoined figures represent this ovum of the natural size, and also magnified.

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[*] Fig. 1, an ovum found in the fallopian tube of a rabbit the third day after impregnation, magnified forty diameters.

Fig. 2, the ovum of the frog when recently laid, magnified two diameters.

Fig. 3, the ovum of the water-newt, in which development has commenced, magnified rather more than twice.

Fig. 4, a diagram showing the embryo of the newt after the vitellary membrane has given way, contained only within the cavity of the substance, which is added to the ovum in the oviduct.

Fig. 5, a diagram showing the embryo of the frog still surrounded by the vitellary membrane, as well as the gelatinous substance, which is added to the ovum in the oviduct.

Fig. 6, an ovum found in the horn of the uterus of a rabbit seven days after impregnation, magnified forty diameters.

Fig. 7, a human ovum thrown off at the third or fourth week; natural size.

Fig. 7.*

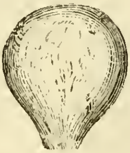


Fig. 8.†

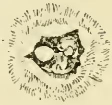
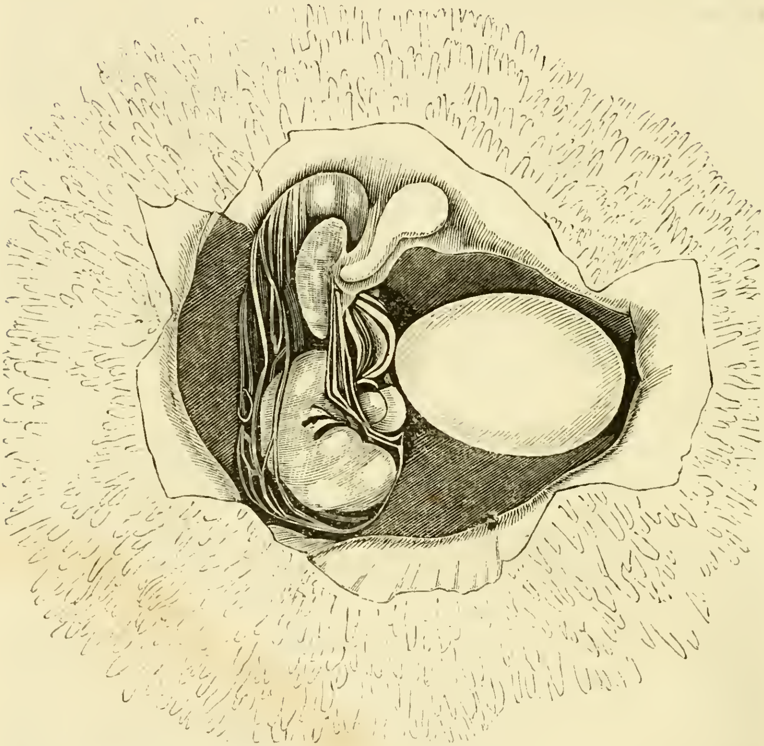


Fig. 9.‡



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* Fig. 7 is a diagram representing a human ovum of the third week (about twenty-one days old) enclosed in the decidua, size of nature, and considered by Prof. Wagner to be in a perfectly normal state.

† Fig. 8 is a diagram of the same ovum, with the chorion laid open: the embryo, about two lines long, closely surrounded by the amnion.

‡ In this figure the same ovum is magnified: all the parts are designed from nature. The chorion is laid open and reflected, and the albuminous space betwixt the amnion and chorion are represented, and also the umbilical vesicle communicating with the intestine, the heart, lower jaw, ear, hemisphere, corpora quadrigemina, liver, eye, and the two branchial fissures.

Fig. 10.*

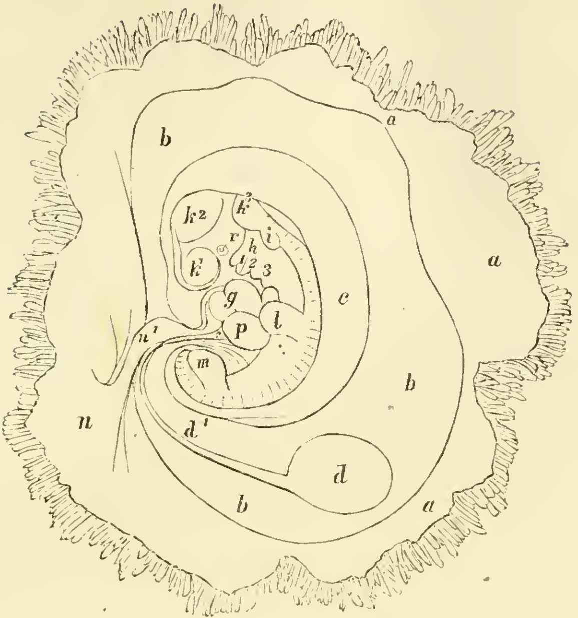
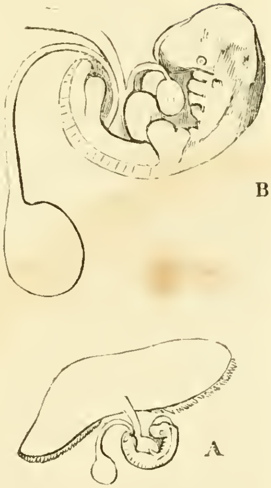


Fig. 11.*



The figures subjoined represent an embryo described by Müller, in Meckel's Archiv. 1830, tab. xi. The length of the embryo was 3½ lines. The ovum was open, and the amnion torn, when it was obtained. From the umbilical vesicle the long pedicle passed, enclosed in the umbilical cord, into the abdomen of the embryo.

M. Coste has given a description and figure of an early ovum. It was the size of a small hazel-nut. The chorion was distinctly villous, and on being divided the body of the embryo was perceived. It was a line and a quarter long and a line and a half broad, of an oval shape, and presented on the abdominal surface an elliptical opening, half a line long. Through this opening there were fixed to the abdominal surface of the embryo the pedicles of two vesicles, one nearly opposite to the middle of the body, the other near the caudal extremity. One of these vesicles corresponds, he thinks, with the umbilical vesicle, and the other to the allantois.

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* *A*, natural size. *B*, magnified view. *C*, view still more highly magnified, with the membranes restored, and references to the several parts. Müller regards it as about twenty-eight days old. *a*, *a*, chorion laid open and reflected; *b*, *b*, *b*, albuminous

Dr. Allen Thomson has described and figured three early ova, in the Edinburgh Medical and Surgical Journal for July, 1839. They were all covered with villi of the chorion. One measured a quarter of an inch in diameter. The vesicula umbilicalis occupied a great part of the cavity of the chorion. The embryo was a line in length, and had its abdomen closely applied to the surface of the vesicle, with which it formed a common cavity. In another ovum, supposed to be only fifteen days old, the embryo and vesicula umbilicalis were attached to the chorion by a soft reticular tissue. The embryo lay almost flat upon the vesicle ; the sides of the embryo passing without interruption, into the walls of the vesicle. The amnion was not seen. In the third ovum described by Dr. Thomson, which was supposed to be about six weeks old, and was malformed, the embryo was one-eighth of an inch in length. The heart hung from the anterior aspect of the body in the form of a looped vessel. The intestine was a straight canal, the mouth being pervious and the anus closed. At the middle of the body, the anus opened, by a widened orifice, into the vesicula umbilicalis, which was contracted at its lower part. From the back part of the embryo, a pyriform body projected, by which it was attached to the chorion. The amnion was not formed. The bronchial apertures were visible.

Many of the very early ova described by other anatomists have likewise been malformed or diseased, and it cannot, with certainty, be affirmed that a single ovum, in a state of perfect health, has yet been examined in the first month of pregnancy. No positive inferences can therefore be drawn from them respecting the development of the different parts of the ovum during the first month after conception.

" Good descriptions and representations of the human embryo," observes Wagner, one of the best and most recent writers on the development of the human ovum, " within the first month of conception, are very scarce. It is true, indeed, that we have many accounts of diseased ova, of monstrous or distorted embryos, of this period ; but instead of aiding us, or advancing our knowledge of the earlier periods of development in the human subject, these accounts are even generally calculated to mislead, and it is therefore well to regard the greater number of them as of no kind of value. Some have said that they have found ova in the tubes, or on their very first entrance into the uterus, and before the separa-

space betwixt the amnion and chorion ; *c*, amnion ; *d*, umbilical vesicle ; *d*¹, pedicle of the umbilical vesicle ; *e*, noose of intestine communicating with *d*¹ ; *g*, heart ; *h*, lower jaw ; *i*, ear ; *k*, cerebellum ; *k*¹, hemispheres ; *k*², corpora quadrigemina ; *l*, anterior, and, *m*, posterior extremity ; *n*, point where the allantois and chorion have coalesced ; *n*¹, umbilical cord ; *p*, liver ; *r*, eye ; 1, 2, 3, branchial fissures.

tion of the embryo from the germinal membrane. But all statements of this kind yet in existence are, in the highest degree, unsatisfactory: the smallest ova hitherto observed in the uterus, or thrown off by abortion, which, in the present state of knowledge in regard to the history of development, can be allowed to be normal in their formation, or as even departing a little from the rule, have been about three weeks old. Such ova, still surrounded by the decidua, measure about seven lines in length; in the naked chorion they are about five lines long. The chorion is at this time beset externally with small, cylindrical, hollow villi, which either do not penetrate the decidua at all, or do so to a very trifling extent. The embryo itself is two lines long; it is plainly surrounded by an amnion, which lies loosely, but still pretty closely, about it, and obviously proceeds from the abdominal laminæ. The embryo is curved, and presents anterior cerebral vesicles or hemispheres pretty well developed, and considerable corpora quadrigemina behind them; there is the distinct appearance of an eye, and a rounded offset from the medulla oblongata indicates the acoustic vesicle; several bronchial arches and fissures are also conspicuous; the last of them, however, not yet completely formed. The anterior extremities are curved leaf-like processes of small dimensions; there is a cleft in the abdomen still open, from which the amnion is reflected. In this cleft is the heart, consisting of a simple auricle and ventricle; behind the heart is the liver, and under the liver the intestine; where the large and small intestine meet, the canal makes an extensive sweep into the umbilical vesicle, which is now nearly equal in size to the embryo. The embryo, together with the amnion and umbilical vessel, do not occupy the entire cavity of the chorion; there still remains a considerable space, which is filled with a delicate filamentous or arachnoidal tissue; occasionally, also, with an albuminous fluid." (See Figs. 7, 8, 9.)

Respecting the mode in which the human amnion originates and is developed, nothing is known with certainty; the views which are now entertained by physiologists on the subject being founded almost entirely upon what is observed in the ova of birds. Dr. Pochels thinks the human amnion consists at first of a large vesicle, which is unconnected with the embryo, and that the embryo acquires its proper amniotic sac by sinking into this vesicle, — an opinion which is contrary to all the observations made on the ova of other animals. M. Coste thinks the amnion is first formed by the detachment or raising up of the outer covering or epidermis of the embryo. Dr. Allen Thomson believes that it is formed by the union of the cephalic and caudal folds of the serous layer of the germinal membrane in the mammalia, nearly the same way as in birds. In the ova of the sheep, rabbit, and cat, he has examined the amnion in its open state, before the union of its cephalic and caudal folds. There are two opinions at least respecting the origin of the chorion. Some think that it exists within the ovary; others believe that the vitellary membrane constitutes the chorion. Valentin is of opinion that it is formed during the descent of the ovum through the tube; as the egg of the fowl acquires the albumen and shell in its progress through the oviduct. Mr. T. W. Jones, from observations on the rabbit, has proved that the ovum gets covered with a gelatinous substance, which consolidates and forms the chorion. Dr. M. Barry has followed Mr. Jones, and his opinions confirm this view.

LECTURE VIII.

ON THE STRUCTURE AND FUNCTIONS OF THE MEMBRANES OF THE HUMAN OVUM IN THE EARLY MONTHS OF PREGNANCY.

At the end of the second month, the human ovum is about the size of a hen's egg, and is then contained entirely within the cavity of the body of the uterus. On dividing the membranes, the *amnion* will be seen forming a much larger and stronger sac than at the end of the first month after conception, but still very transparent, and without bloodvessels or regular fibres. In some ova, before the eighth week, the amnion has increased so much that it fills the greater part or the whole of the cavity of the chorion; and the cellular tissue which had been situated between it and the chorion has partly or entirely disappeared. The amnion is much larger, and contains a far greater quantity of liquor amnii, at this period, in some ova than in others of the same age. The amnion and chorion always form the sheath of the umbilical cord; and the umbilical arteries and vein, and duct of the vesicula umbilicalis, can be seen through the amnion and chorion passing along the cellular tissue of the cord. The arteries sometimes begin at this early age to turn round the vein, and the whole cord to be twisted round near the embryo. In the third month of pregnancy the amnion and chorion are usually closely united together through their whole extent, and continue to enlarge at the same rate till the end of the ninth month.

The *vesicula umbilicalis,* in healthy ova, is nearly of the same size at the end of the second as it is at the end of the first month; but its duct is impervious, and can seldom be traced farther than the umbilicus of the embryo. The omphalo-mesenteric vessels, which consist of an artery and vein from the superior mesenteric artery and vein, are often seen accompanying the duct, and ramifying upon the vesicle. In many ova expelled in abortion, the vesicula umbilicalis has lost the appearance of a pyriform sac filled with fluid, and is a small, flat, solid, opaque body, firmly adherent to the outer surface of the amnion, near the insertion of the umbilical cord into the membranes. It is sometimes seen in this condition on the fœtal surface of the placenta, after its expulsion in labour at the full period.

The membrane of the chorion is at this time uniformly thicker and stronger than the amnion, and no bloodvessels have ever been observed ramifying in it. Its inner surface is smooth, but the whole of its outer surface is covered with villi, which grow from it by slender roots, and spread out like the branches of a tree under the decidua, in which they are firmly imbedded. The villi are most luxuriant on that side of the chorion where the placenta exists, but they are always present also on the opposite side of the chorion, and are joined together at their extremities, so as to form a great reticular or cellular structure between the decidua and membrane of the chorion. The villi often terminate in irregular-shaped, bulbous enlargements, and from their sides slender filaments pass off, to connect them together. The villi of the chorion do not run in pairs, like bloodvessels, and no anatomist has ever succeeded in injecting them. They are not bloodvessels, though often called the shaggy vessels of the chorion. Seen through a powerful microscope, they resemble nothing so much as a mass of small, smooth, convoluted fœtal intestines; but they do not appear to be hollow. From the sides of the villi others arise by slender roots, which often suddenly enlarge, and terminate in blunt, rounded extremities. Between the roots and branches of the villi there are large cells or spaces formed, which all freely communicate together, and also with the cells or interstices of the placenta, which at this period do not essentially differ from the cells of the chorion, and are always, in ova, expelled in abortion, distended with fluid or coagulated maternal blood. If a blow-pipe be introduced into the cells of the chorion or placenta, the air passes all round the ovum, and fills these cells completely. Injections thrown into the cells of the chorion or placenta, if they do not contain much coagulated blood, likewise fill the whole of the space between the decidua and outer surface of the chorion. That it is maternal blood

Fig. 12.*

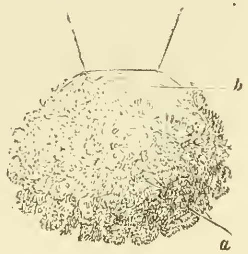
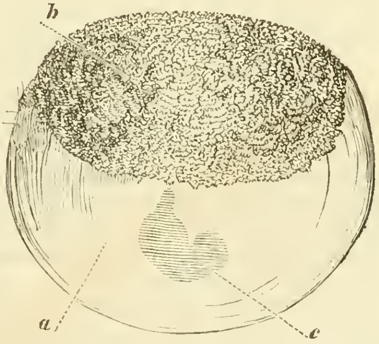


Fig. 13.†



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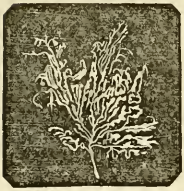
* Fig. 12, represents, though very imperfectly, the appearances presented by the villi of the chorion at the end of the second month. *a* shows the situation of the placenta; *b* is the part which lay under the decidua reflexa, where the villi are beginning to disappear.

† Fig. 13.—*a* and *c*, the chorion, where the villi have disappeared; *b*, the situation of the placenta, where the villi of the chorion have continued to grow.

which fills the cells of the chorion and placenta in aborted ova is evident from this fact, that, where the embryo is not developed, I have repeatedly seen these cells full of blood. There is no specimen of the human ovum now before you in which there is not more or less maternal blood seen coagulated in the cells of the chorion and placenta; and it is impossible the blood could have been forced into these by any artificial means. This blood, it will soon be seen, can only enter the cells of the placenta and chorion through the small tortuous arteries which are always observed in that portion of the decidua which covers the uterine surface of the placenta.

Fig. 14.*



At the end of the second month of pregnancy, the structure of the placenta is essentially the same as at the full period. It consists entirely of the ramifications of the two umbilical arteries and vein, covered on the uterine side by the decidua, and on the fœtal surface by the amnion and chorion. But all the branches of the umbilical cord in the placenta have an additional coat from the villi of the chorion. In what manner the umbilical vessels pass into the villi of the chorion to become invested with a layer of chorion, it is impossible to explain, unless it be admitted that they are developed consentaneously. Between the fœtal vessels covered with chorion there are cells or interstices, precisely similar to those which are seen on the opposite side of the chorion, where the villi also form a great chain, or series of cells, which all freely communicate with those of the placenta. There being no septum between the cells of those villi of the chorion which form the placenta, and those which are destined to disappear in the fourth month on the other side of the ovum, if maternal blood enters the cells of the placenta it must fill all the cells of the chorion; and thus not only the villi of the placenta, but all the villi of the chorion, must be in contact with, or bathed in, the maternal blood.

The decidua is the outer membrane of the ovum, and covers it as completely as the shell does the hen's egg. That portion of it which covers the placenta is called the placental decidua. At the margin of the placenta this membrane separates into two distinct layers, which extend over the whole of that part of the ovum which is not covered by the placental decidua. The outer of these layers of decidua is called the decidua vera, or uterine decidua, the inner layer the decidua reflexa, and between these there is always a large cavity formed, called the decidual cavity. At the edge or circumference of the placenta the placental decidua always divides into two distinct membranes, between which there is a large, smooth cavity, the outer wall of which is formed by the uterine decidua, and the inner wall by the decidua reflexa. The outer surface of the uterine decidua adheres to the inner surface of the uterus, but the inner surface of the uterine decidua is smooth and free, like the pleura costalis. The outer surface of the decidua reflexa is also smooth and free, like the pleura pulmonalis, but its inner surface firmly adheres to the extremities of the villi of the chorion, as the pleura pulmonalis does to the substance of the lungs.

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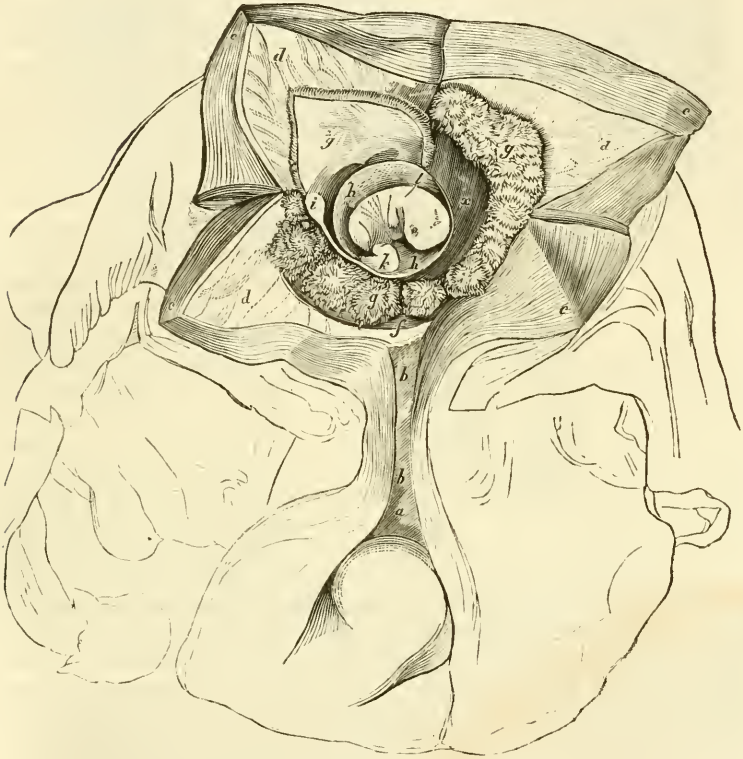
* Fig. 14. — Diagram representing one of the villi of the chorion arising by a single root.

Diagram, from Wagner, representing the Uterus, with its contents, in the Seventh Week of Pregnancy.

Fig. 15.*



The outer membrane of the human ovu~~m, now call~~ed mem-

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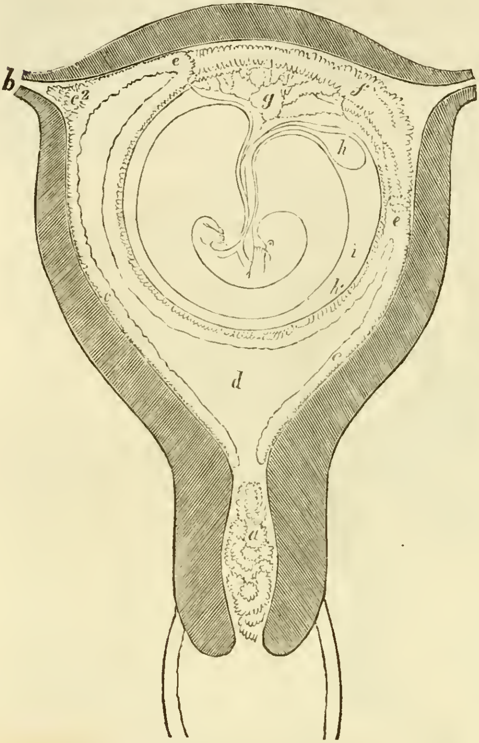
* The embryo, perfectly normal in its conformation, is enclosed in its amnion. Betwixt the amnion and chorion the umbilical vesicle is seen. The uterus, lined with the decidua, is laid open, and its parietes reflected so as to show its contents. *a*, the os externum; *b b*, cervix uteri; *c c c c*, the uterus laid open by a crucial incision, and reflected in four flaps; *d d d*, decidua vera spread over the uterine surface; *g*, flocculi or villi of the chorion; *g*, internal aspect of the chorion; *h*, amnion; *i*, umbilical vesicle; *k*, umbilical cord; *l*, embryo; *x*, space for the tunica media, as it is termed, between the amnion and chorion. The embryo is depicted of its natural size, but the other parts represented are only two-thirds the size of nature.

Sectional plan of the Gravid Uterus, from Wagner, in the Third and Fourth Month.

Fig. 16.*



brana decidua, was first accurately delineated by Dr. William Hunter in 1774. The different portions of this membrane, and the relations they bear to the uterus, placenta, and chorion, have been most faithfully represented in eleven figures contained in the two last plates of his Anatomy of the Human Gravid Uterus. In one of the references to these figures it is stated, that the decidua reflexa forms an external covering to that part of the chorion which is not in contact with the inner surface of the uterus, and which is turned over the chorion much in the same manner as the inner lamella of the pericardium is reflected to cover the outer surface of the heart. In Dr. Hunter's Anatomical Description of the Human Gravid Uterus and its Contents, published in 1794, the decidua, in the early months of pregnancy, is described as a soft, tender, pulpy, vascular membrane, which lines the whole cavity of the fundus uteri, reaching to the beginning of the cervix, and passing a little way within the origin of the fallopian tubes. The inner surface of this membrane is smooth, but the outer surface has a prodigious number of little processes or flocculi shooting from it, which give it a very irregular appearance. Dr. Hunter describes the decidua reflexa as a membrane of considerable thickness, and of a yellower colour than the uterine decidua, or decidua vera. The ovum, he says, lies between a part of the decidua vera and the decidua reflexa, both of which unite into one membrane at the edge of the placenta, or the decidua vera divides at the edge of the placenta into two laminæ, one of which passes between the placenta and inner surface of the uterus, and the other forms the decidua reflexa, which covers the outer surface of the chorion. Where the decidua reflexa is beginning to pass over the chorion, there is, at

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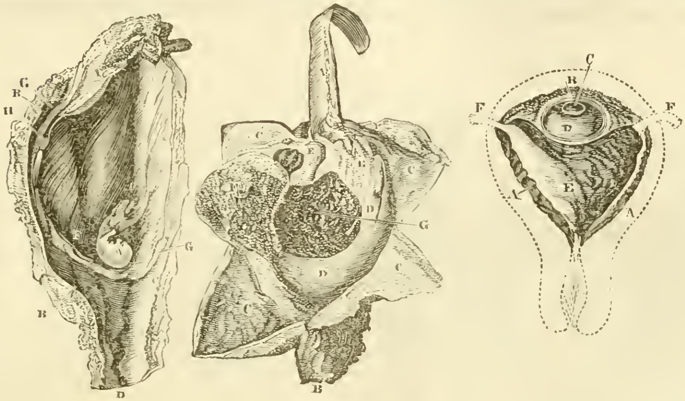
* *b*, the decidua vera; *c*², the decidua vera passing into the right fallopian tube; the cavity of the uterus is almost completely occupied by the ovum; *e e*, points of the reflection of the decidua reflexa (in nature the united deciduæ do not stop here, but pass over the whole uterine surface of the placenta); *g*, supposed allantois; *h*, umbilical vesicle; *i*, amnion; *k*, chorion, covered with the decidua reflexa; *d*, cavity of the decidua; *f*, decidua serotina, or placental decidua.

Diagrams, from Hunter, to illustrate the Membranes of the Ovum.

Fig. 17.* Fig. 18.† Fig. 19.‡



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* Fig. 17, a vertical section of an ovum of about nine weeks. A A, the section of the placenta which is supposed to adhere to the upper and back part of the uterus; B B, the section of the anterior portion of the decidua; C C, the section of the posterior portion of the decidua; D, the termination of the decidua at the cervix uteri; E E, the cavity of the amnion, in which the embryo hangs by a slender navel-string from the inside of the placenta; F, the section of the three membranes, which are not only contiguous, but adhere to one another, viz., the amnion, the chorion, and the decidua reflexa; G G, the angle at the edge of the placenta where the inner layer of the decidua is reflected over the outside of the chorion; H, here those three membranes are a little separated, to show their course at the placenta.

† Fig. 18, an aborted ovum, of about eight weeks. A small strap of the decidua has been cut out, and turned up, and the decidua opened by a crucial incision, and the four angles reflected, and then a round piece of the decidua reflexa dissected off, and turned to one side, to show the villi of the chorion.

A, the cut slip of decidua turned up; B, the part of the ovum where Dr. Hunter supposes there is no decidua, viz., opposite to the passage of the cervix uteri; C C C C, the inside of the four angles or flaps into which the uterine decidua was reduced by a crucial incision; D D, the decidua reflexa covering the villi and cells of the chorion; E E, the angles at the edge of the placenta, where the uterine lamella of the decidua is continued over the outside of the chorion, forming the decidua reflexa; F, a round portion of the decidua reflexa dissected from the outside of the chorion, and turned aside; G, "the chorion with its shaggy vessels laid bare. These vessels adhered firmly to the decidua reflexa, and parts of them were cut of with that membrane."

‡ Fig. 19, a diagram, not from nature, of an early ovum in the uterus. A A, uterine decidua; B, placental decidua; C, the cavity of the amnion; D, the cavity or space between the amnion and chorion; E, the cavity of the decidua; F F, the tubes open upon the inside of the decidua. The cervix uteri contained no part of the ovum.

an early period of pregnancy, an angle formed between it and the decidua which lines the uterus; and here the decidua is often extremely thin, and perforated with small openings, so as to look like a piece of lace. Though the decidua be allowed to be the outer membrane of the secundines, Dr. Hunter observes, yet as it is really the internal lamella of the uterus, we may still retain the old language, and say that the outer membrane of the ovum is chorion, and that the chorion is in contact with, and adheres to, the uterus.

Fig. 20.*

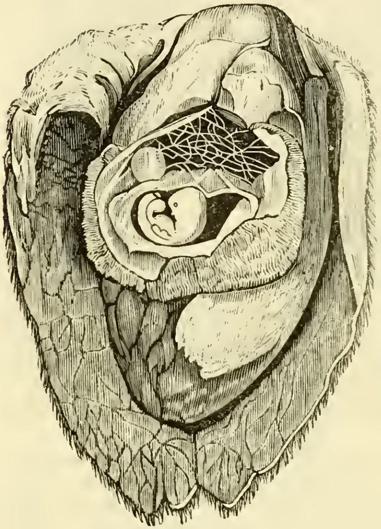
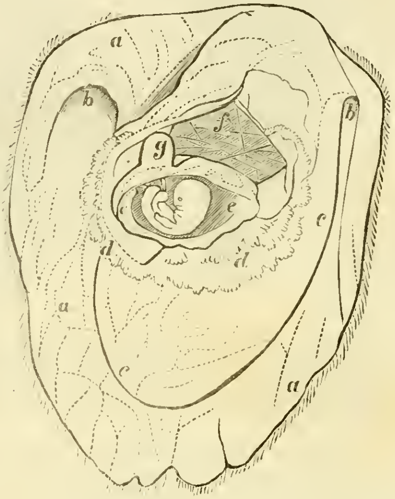


Fig. 21.†



Dr. Hunter has said nothing respecting the physiology of the decidua reflexa and uterine decidua, or of the great cavity formed between them; and he has not endeavoured to explain why these structures should exist only in the human ovum during the early months of pregnancy. Though many distinguished anatomists have examined and described the different portions of the deciduous membranes during the last sixty-seven years, no important addition has been made to Dr. Hunter's description of them; and the greatest discordance of opinion still prevails respecting their structure, functions, and mode of formation. Some have denied altogether the existence of the placental decidua and the decidua reflexa, and others the vascularity, and even the organization of the uterine decidua. It is still the opinion of some anatomists, however destitute of truth, that the decidua is merely the altered mucous membrane of the uterus.

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* Fig. 20 represents an aborted ovum of five weeks, described and figured by Wagner. The various parts of an ovum at this period are well seen, and all in their natural state, except the decidua reflexa.

† Fig. 21 represents the same ovum in outline. *a* indicates the decidua uteri reflected at *b* into the decidua reflexa *c*, which is thickened by the infiltration of blood; *d*, the villa of the chorion; *e*, the amnion laid open; *f*, the reticular tissue of the amnion; *g*, the umbilical vesicle.

In the next lecture I shall state certain facts which seem to prove that the circulation of the maternal blood in the human ovum during the early months is entirely carried on by the different layers of the decidua, and by the cells of the placenta and chorion.

LECTURE IX.

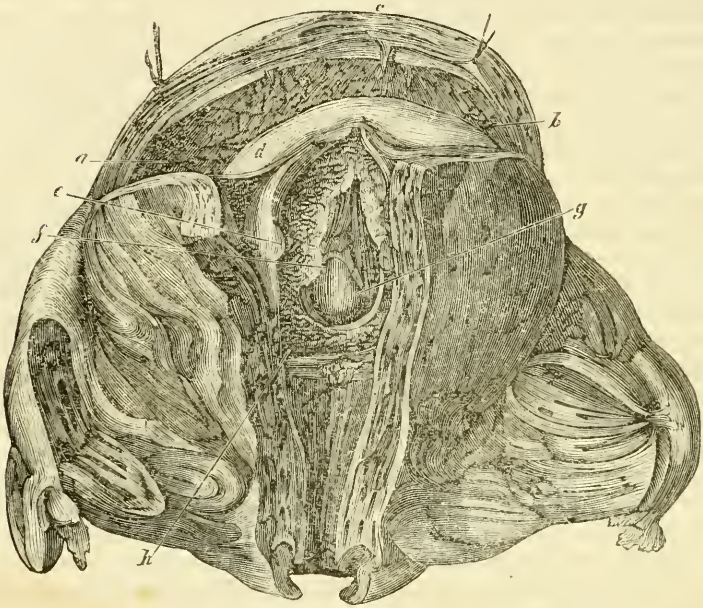
ON THE FORMATION AND STRUCTURE OF THE DECIDUA REFLEXA, AND THE PURPOSES SERVED BY THE DECIDUAL CAVITY IN THE HUMAN OVUM.

On the 10th of March, 1832, a young woman, who was in the second month of pregnancy, poisoned herself with oxalic acid. The uterus had acquired double the size which it usually exhibits in the unimpregnated state. It was five inches long, three and a half in the great lateral direction, and two inches in the antero-posterior diameter. A longitudinal incision was carried down the middle of the posterior surface, crossed by a transverse one parallel to the entry of the fallopian tubes. The thickness of the parietes of the uterus, though greater than in the unimpregnated state, were not proportionate to the general increase in the dimensions of the organ: they were four lines at the fundus, and six lines at the cervix, gradually increasing towards that part: the chief difference was observable in the already enlarged size of the uterine venous sinuses. The deciduous membrane, which closely adhered to the inner surface of the uterus, was then laid open by two incisions parallel with the longitudinal and transverse incisions previously made in the parietes of the uterus. The cavity of the uterus being exposed, the ovum, about the size of a pullet's egg, came into view, and was observed to be situated towards the lower part of the uterus. It was lodged entirely in the cavity of the body of the uterus, and no part of it extended into the cervix. The part of the cavity to which it adhered was included between two parallel lines, drawn, the one transversely across the uterus at the distance of half an inch below the entry of the fallopian tubes, the other at two inches distance from the os tincæ; consequently, the ovum was situated altogether below the entry of the fallopian tubes, and was unattached both at its upper and lower part, leaving a free space or canal between it and the os tincæ, corresponding to the shape of the elongated cervix, and a much larger cavity, which was the decidual cavity, between the upper part of the ovum and the fundus uteri. Intervening between the superior and unattached surface of the ovum and fundus uteri was a broad cavity, measuring three inches in the lateral, and one and a half in the antero-posterior diameter, and which appeared at first only a few lines in depth, but on further inspection was ascertained to be nearly two inches in depth. The upper concave surface of the cavity formed by the decidua lining the fundus uteri, or uterine decidua, was irregular, and slightly reticulated. The inferior convex surface formed by the decidua covering the villi of the chorion, or decidua reflex, was perfectly smooth, resembling somewhat the external serous surface of the uterus. On examining this with a magnifier, numerous small, elliptical openings were seen in every part of the membrane. Into this large cavity between the decidua reflexa and the decidua vera the fallopian tubes opened by palpable orifices; that on the left side, by which the ovum had entered the uterus, being rather more than a line in diameter; that in the right rather less. The cavity thus formed between the decidua lining the fundus uteri, and the decidua covering the upper and unattached portion of the ovum, or decidua reflexa, was filled with a red-coloured, serous fluid. The ovum was next laid open by an incision through the chorion parallel with the longitudinal incision of the uterus, and the amnion enclosing the embryo was brought into view. The placenta was situated principally over the cervix and posterior part of the uterus, and the decidua, closely adhering to the placenta, passed across the upper part of the cervix uterus in the form of a thick, reticular membrane. The decidua was then observed to extend upward between the uterus and chorion, every where firmly connecting these together as high as the entrance of the fallopian tubes. From this point the deciduous membrane was spread out in two different directions — viz., over the upper convex and unattached surface of the ovum, to form the decidua reflexa, and over the whole concave surface of the fundus, uteri, to form the uterine decidua. Between these membranes was the decidual cavity, into which the fallopian tubes freely opened.

If you examine this gravid uterus of two months, you will see the chorion and amnion enclosing the embryo and umbilical cord, and the placenta, covered with its decidua, adhering all around to the upper part of the neck of the uterus. You will also see clearly that the decidua reflexa lies entirely above the villi of the chorion, on that side of the ovum where the placenta does not exist, and where the ovum is not attached to the uterus. In all the diagrams from Dr. Hunter, Wagner, and other anatomists, which you have seen, the placenta has invariably been represented as adhering to the fundus uteri, and the decidua reflexa has been situated near the cervix, and appearing as if mechanically depressed or pushed down before the chorion or ovum. But in this preparation it is obvious that the decidua reflexa could not have been pushed down before the ovum, because it lies above or covers the ovum — the ovum lies between the decidua reflexa and the cervix uteri — and as the ovum enlarged the decidua reflexa must have been forced upward to the fundus uteri, which was lined with the decidua vera, instead of downward to the cervix. The decidual cavity is, you observe, at the fundus uteri, above the ovum, and both fallopian tubes open into this cavity by palpable orifices. Instead of being covered with the uterine decidua, this membrane passes into them, and they are left completely pervious, so that no membrane existed which the ovum could mechanically push before it. I am not aware of the existence of any other specimen of the gravid uterus at so early a period, in which the placenta is adherent to the neck of the uterus, and the decidua reflexa is placed above the villi of the chorion, or that part of the ovum which is not attached to the uterus; but it is impossible to doubt that in all cases of placental presentation in the early months, the decidua reflexa completely invests the villi of the chorion, and that the decidual cavity is situated at the fundus of the uterus. If the statements of the authors above alluded to, and the generally received opinions respecting the formation of the decidua reflexa, were well founded, it would follow, that in all cases the ovum would attach itself to the uterus by the placenta, either directly over the edges of the fallopian tubes through which it had descended, or to its immediate vicinity, and that the deciduous membrane would never be found interposed between the uterus and placenta, as it invariably is. The facts which have now been adduced, and will hereafter be stated, demonstrate that the fallopian tubes are open in the early months of gestation, that the ovum may attach itself, by the placenta, to the fundus, body, or cervix uteri, and that the deciduous membrane forms neither a shut sac nor inorganic layer, prior or subsequent to the arrival of the ovum in the cavity of the uterus. These circumstances are also strictly in accordance with the fact, that when the ovum can first be perceived, it lies loosely imbedded in the soft, flocculent, albuminous matter, which, at this period, coats the inner surface of the uterus, and that this pulpy semifluid matter becomes gradually converted into those delicate organised membranous layers by which the attachment of the ovum to the uterus is so firmly secured, and the most important function of the ovum performed during the whole period of pregnancy. The albuminous substance interposed between the uterus and chorion becomes the decidua uteri, or decidua vera, while the albuminous matter which envelopes the unattached hemisphere of the ovum becomes the decidua reflexa. To whatever part of the uterus the ovum adheres by the placenta, its relation to the deciduous membranes will be the same, the uterine decidua forming the connecting membrane between the ovum and uterus, and the decidua reflexa covering only that part of the chorion which hangs loose within the cavity of the uterus. Dr. William Hunter offered no explanation of the manner in which the decidua reflexa is formed, and Dr. Baillie, who completed his description of the gravid uterus and its contents, says, that the manner in which the decidua envelops the ovum has never yet been observed, and therefore can only be a subject of conjecture. The most probable supposition is, that the ovum passes from the ovarium into the cavity of the uterus, while the coagulable lymph is pouring out by the arteries of the uterus, which is afterwards changed into decidua. "One can hardly imagine," he says, "that the ovum should make its way into a membrane which is already formed, and, though tender, yet capable of some degree of resistance."

In the following figure are represented the appearances above described in the gravid uterus of a young woman who destroyed herself by oxalic acid in the second month of pregnancy.

Fig. 22.*



M. Velpeau thinks that the membrane which lines the fundus uteri in this preparation is not the decidua vera, but the mucous membrane of the uterus altered. M. Coste, several years ago, when in London, before examining this uterus, had formed the same opinion. To determine the point, it was removed from the spirit, and a much larger portion of the decidua detached from the fundus of the uterus than is seen in this drawing, and the correctness of the description which I have given was so completely demonstrated, that he expressed himself perfectly convinced that the decidua reflexa lay above the unattached part of the ovum, and that the fundus uteri was lined with the decidua vera; the lining membrane of the uterus being distinctly seen after the separation of the decidua from it. M. Coste admitted that before examining this preparation he doubted the existence of the decidua reflexa, as some other anatomists on the continent have done. But there is another subject of far greater importance than the origin and mode of formation of the decidua reflexa, viz., the purposes served by the decidual cavity in the ovum. I believe the decidual cavity is peculiar to the human ovum, and does not exist at all in the ova of the lower animals: it certainly has no existence in the ova of any of the larger quadrupeds.

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* *a*, the entrance of the left fallopian tube into the decidual cavity; *b*, the uterine orifice of the right fallopian, also pervious, and opening into the decidual cavity; *c*, the decidua vera, or decidua uteri, coating the inner surface of the fundus uteri, and forming the outer wall of the decidual cavity; *d*, the decidua reflexa lying above the ovum, and covering all that portion of it which is not attached to the uterus, and which is occupied by the villi of the chorion; *e*, the decidua vera, or uterine decidua, passing down between the uterus and placenta; *f*, the chorion; *g*, the amnion; *h*, the placenta adhering to the neck of the uterus, and the placental decidua torn passing across the upper part of the cervix, which is not shortened.

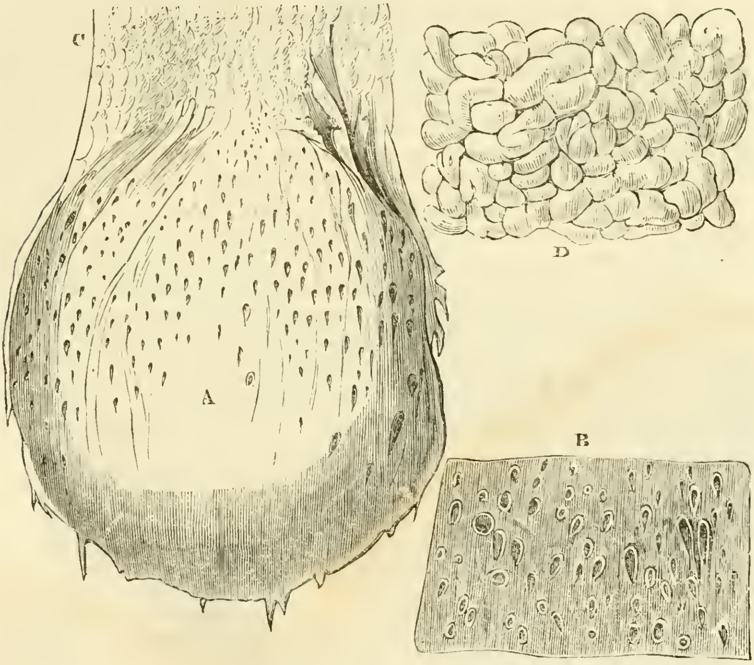
In 1832, M. Breschet stated, in his work entitled, "Etudes sur L'Oeuf," &c., that this cavity always contains a fluid, which at an early period is colourless, mucous or slightly albuminous, and which has at a later period a milky appearance, and resembles an emulsion, united to a little mucilage of a faint rose colour. He says, it must amount to several ounces when the ovum has reached the cavity of the uterus, and at the time the decidua reflexa begins to be formed; but he admits he was never able to collect the fluid so as to have it submitted to chemical analysis. This fluid he called hydroperione, having previously applied, without the slightest advantage, the term fœtal perione to the decidua reflexa, and uterine perione to the uterine decidua. M. Velpeau, in his work on Embryology (1833), likewise stated that the decidual cavity contains a fluid which he has thus described. "Le liquide qui remplit sa cavité, et tient ses deux lames ecarteés, parfois tout à fait limpide, est le plus ordinairement rougeâtre, filant, semblable à du verre fondu, ou mieux, à du blanc d'œuf. Je n'ai point pensé à le faire analyser." M. Breschet thinks that this fluid promotes the slow and regular dilatation of the uterus, and protects the ovum; and that it contributes to the nutrition of the ovum and embryo, before the vessels of the embryo and the vesicula umbilicalis are formed. It is difficult to believe that the decidual cavity, if it exists at all at this early period, should be able to contain several ounces of hydroperione.

The following facts seem to prove that the circulation of the maternal blood in the human ovum during the early months is entirely carried on by the decidual cavity and its walls, and by the cells of the placenta and chorion. In a healthy recent ovum of six or eight weeks, numerous small tortuous canals or arteries are visible in the placental decidua. These vessels usually project a little beyond the surface of the placental decidua, and the orifices with which they had anastomosed with the arteries of the uterus are very distinct. These decidual arteries are often seen in the placental decidua filled with blood, at the end of the ninth month, and have been minutely described by Dr. W. Hunter. It is now admitted by all anatomists that these curling arteries or canals in the placental decidua in the latter months, convey the maternal blood from the uterine arteries into the interstices or cells of the placenta, and that there is no other channel by which the blood can be conveyed into the placenta. Elliptical openings can also be seen in the placental decidua both in the early and advanced months, which anastomose with the oblique venous apertures which are always found in the lining membrane of the uterus where the placenta has adhered. A communication is formed by these openings between the cells of the placenta and veins of the uterus, and the blood which has been carried by the decidual arteries into these cells flows back into the uterine veins, through these oblique openings in the placental decidua. At the end of the second month of pregnancy, only about a fourth part of the chorion is occupied by the placenta, the remainder being covered with the villi of the chorion and decidua reflexa, and is unattached to the uterus. It is obvious, therefore, that at this time the whole of the blood which enters the ovum, and which is invariably found distending the cells of the placenta and chorion, must pass through the arteries of the placental decidua. But the blood which flows from the cells of the placenta into the cells of the chorion cannot flow back, and pass through the openings in the placental decidua into the veins of the uterus, unless there exist two currents of blood in the cells of the chorion flowing in opposite directions; which it is impossible to admit. The blood, therefore, which fills the cells of the chorion, must pass by another route into the venous system of the uterus, than by the elliptical openings in the placental decidua; and it can only be through the decidua reflexa and decidual cavity, which I now believe performs the office of a great venous sinus.

If you examine the decidua reflexa in a perfectly healthy ovum, you will observe numerous small oblique openings, with smooth edges, in the whole of the membrane, but in greatest number near the margin of the placenta, where an angle is formed by the uterine decidua reflexa. These openings in the decidua reflexa communicate with the cells of the chorion, and the cells of the chorion with those of the placenta. I have repeatedly filled all the cells of the chorion and placenta with air, by introducing a blow-pipe into one of these apertures in the decidua reflexa; and when the air has filled all these cells, it has escaped freely through the surrounding openings in the decidua reflexa. The same has been done with mercury; and in this ovum the whole of the cells of the chorion and placenta have been filled with injection introduced by one of these openings in the decidua reflexa. When the cells were filled with injection, it began to escape from the openings in the decidua reflexa around, and you can see the injection hanging through some of the openings. These facts prove that there exists, by means of these openings in the decidua reflexa, a free communication between the cells of the chorion and the decidual cavity. But there is another still more conclusive proof. If you take a recent ovum, the decidua reflexa of which is in a healthy condition, and make slight pressure, you will see the maternal blood begin to flow through these openings from the cells of the chorion; and I can now show you several ova, in which coagula of the fibrin of the blood are seen filling these openings, and were hanging through them into the decidual cavity. These coagula could not have been formed in these canals if the blood had not been actually flowing through them, before the separation of the ovum from the uterus. The decidua reflexa, besides, is covered, as you see in this preparation, by a fine membrane-like epithelium, which has been dissected off, and floats in the spirit, and of which a beautiful drawing has been made by Mr. Perry. This fine membrane not only covers the whole decidua reflexa, and passes into the openings in it, but it is also reflected over the whole inner surface of the uterine decidua. The whole decidual cavity is therefore lined with this very fine membrane, which resembles the serous membrane of cavities which contain blood.

The appearances presented by the orifices of the canals in the decidua reflexa are seen in the following drawings.

Fig. 23.*

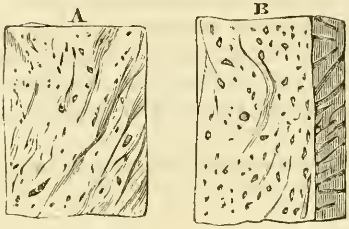


* A, the decidua reflexa, with a few of the smooth orifices of the canals passing between the cells of the chorion and decidual cavity — natural size. The openings had

In many morbid ova expelled in abortion the decidua reflexa is in a hard, altered state, and few or no openings like those now described can be observed in it, or only close to the placenta. The cells of the placenta and chorion are generally observed in these ova to be full of masses of coagulated blood — a condition which is usually called apoplexy of the ovum, and appears to arise from the obliteration of the canals in the decidua reflexa.

The outer wall of the decidual cavity is formed by the uterine decidua, which varies much in thickness. The outer surface of this portion of the decidua, which had adhered to the uterus, is usually very irregular, and long, slender filaments from thick roots are often seen projecting from it: some of these filaments appear to be hollow. A great number of openings are also visible on the outer surface of the uterine decidua, which are the terminations of venous canals, which pass obliquely through this membrane from the smooth, inner surface. I have not observed any considerable arteries in this portion of the decidua similar to those which are seen in the placental decidua. The inner surface of the uterine decidua is comparatively smooth, and, seen through a magnifier, appears not very unlike the convolutions of the brain; at the bottom of these are deep grooves or depressions, in which are situated numerous minute apertures of a circular or oval form. There are some of these openings on the raised portions of the membrane as well as in the grooves. Into these openings, the epithelium, which lines the decidual cavity, passes, and coats the venous canals in the decidua uteri. These veins pass obliquely through the membrane; they frequently communicate together, so as to form a great plexus, and gradually increase in size as they approach the uterine surface. The appearances presented by the orifices of the veins on the inner surface of the uterine decidua are seen in these figures, but by no means so clearly as in the preparation and drawing.

Fig. 24.*



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almost entirely closed in that part of the decidua reflexa which was most remote from the placenta, and the villi of the chorion had here also nearly disappeared.

B, the openings in the decidua reflexa, as seen through a simple lens of an inch focus.

C, the inner surface of a small portion of the uterine decidua or decidua vera, unusually thick and rugous.

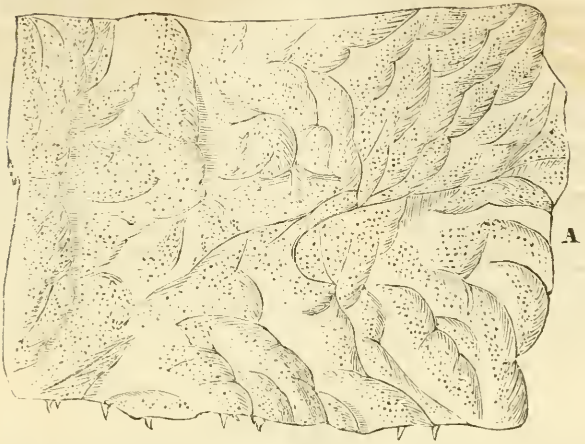
D, a magnified view of the same membrane, with a few small orifices of vessels.

* In these figures are represented the openings in the decidua reflexa and uterine decidua, as seen in another ovum of an earlier age.

A, a small portion of decidua reflexa magnified.

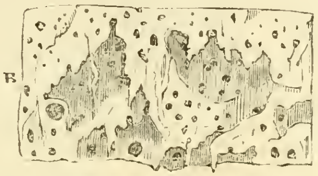
B, inner surface of uterine decidua, with the veins passing obliquely through the membrane to the uterine surface.

Fig. 25.*



I once saw the decidua uteri adhering through its whole extent to the inner surface of the uterus in the second month, with all these veins distended with firm dark clots of blood. On separating the membrane gradually, these coagula were seen passing from the decidual veins into the veins of the uterus. The trunks of the veins were on the uterine side of the membrane, and they had evidently been conveying blood from the decidual cavity to the veins of the uterus. All the veins of the uterine decidua, in several of these preparations which you have seen, are filled with coagula of the fibrin of the blood; and by following these, the course of the veins from the inner to the outer surface of the membrane can be traced. In *this* preparation all these veins have been filled with a white injection, so that the direction of the vessels, and their connection with one another, and their termination on the outer surface of the membrane, can be clearly seen. It was by observing the manner in which the coagula of the fibrin of the blood passed through the placental decidua into the veins of the uterus, and by following coagula from fibrous tumours of the uterus into the veins, that I first became acquainted with the manner in which the circulation of the blood is carried on in the placenta, and in fibrous tumours of the uterus. It was likewise by tracing the coagula which occasionally distend the veins of the decidua uteri that I was first led to suspect that these vessels do not convey blood or fluid of any kind from the uterus

Fig. 26.†



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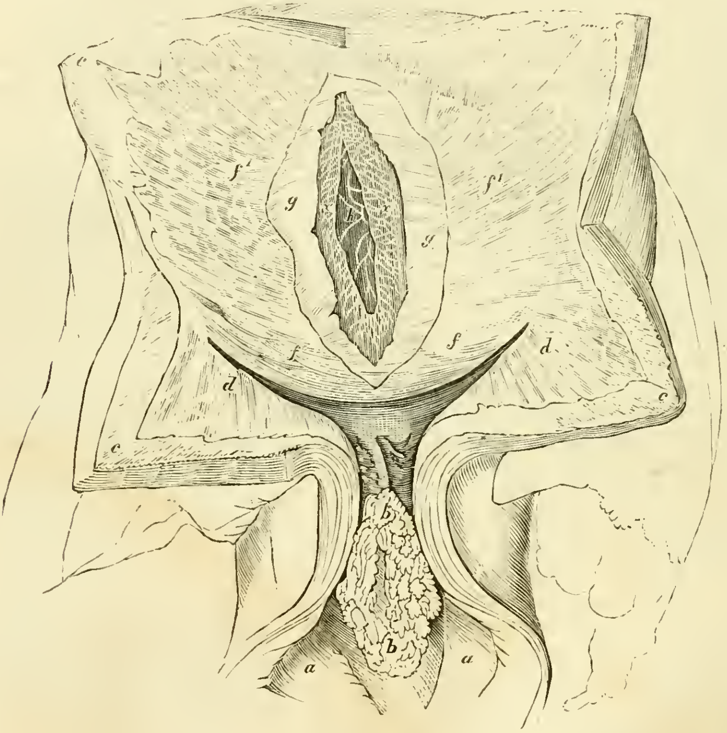
* A, the orifices of the veins of the uterine decidua opening into the decidual cavity; natural size.

† B, a portion of the same membrane, as seen through a good lens.

into the decidual cavity, as many physiologists maintain, but remove from this cavity that blood which had passed into it, through the openings in the decidua reflexa, from the cells of the chorion. In several specimens of ova expelled in abortion, with the decidual membranes entire, I have seen the cavity filled with fluid and coagulated blood. Coagula of the fibrin were seen hanging out of the orifices of the canals in the decidua reflexa in this specimen, of which a drawing has been made. The blood could not have been forced here into the decidual cavity by any accident, as Breschet states was the case with the ovum described by Heusinger, where the decidual cavity was likewise full of blood.

Diagram, from Wagner, of the Gravid Uterus at the end of the Fourth Month, laid open, and the involucra of the ovum delineated in situ. In the cervix there is a great plug of gelatinous matter.

Fig. 27.*



[*] *a*, os externum; *b b*, gelatinous plug filling the cervix uteri; *c c c*, the uterus reflected in four flaps; *d d*, decidua vera lining the uterus; *f f*, the decidua reflexa passing into the vera by a circular fold, slit smooth, and unconnected inferiorly; at f^1 f^1, however, it is rough, as at this part it was in contact with the decidua vera, and was only seperated from this by force; *g*, villi of the chorion; *h*, amnion; x x x, supposed tunica media, lying between the amnion *h*, and the chorion *f*.

From these facts, it appears probable that, in the early months, the maternal blood is conveyed by the arteries of the placental decidua into the cells of the placenta and chorion, and that the blood which is not returned directly back to the veins of the uterus, through the venous openings in the placental decidua, flows from the cells of the chorion, through the decidua reflexa, into the decidual cavity; and from thence into the veins of the uterus, through the venous canals of the uterine decidua. As pregnancy advances the villi of the chorion and decidual cavity gradually diminish, and before the fifth month they have almost entirely disappeared, and the circulation of the blood is effected solely by the placenta, which has rapidly enlarged. The canals in the decidua also disappear, and the membrane is very thin, and presents a complete cribriform or lace-like appearance.

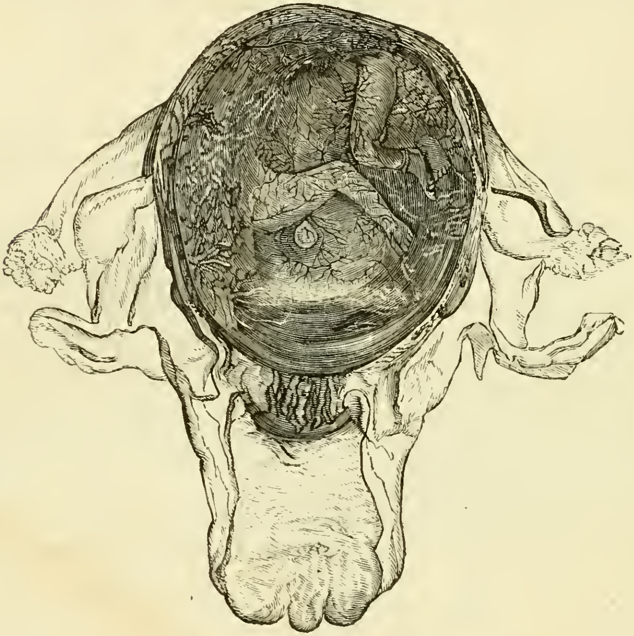
LECTURE X.

ON THE GROWTH AND ENLARGEMENT OF THE UTERUS DURING PREGNANCY, AND THE STRUCTURE OF ITS COATS, BLOODVESSELS, AND ABSORBENTS, AT THE END OF THE NINTH MONTH.

Cessation of the catamenia, sense of fulness, weight, or uneasiness in the region of the uterus and bladder, irritability of stomach, and of the whole nervous and vascular systems, are the most common symptoms of early pregnancy. Though the uterus, at the end of the second month, be nearly twice as large as in the unimpregnated state, its fundus cannot be felt in the hypogastrium; and, except a little fulness and softness, there is no change in the orifice and cervix. In the third month, the lips of the os uteri are thick and soft, and the finger can be introduced a little way within them, and the Nabothean glands felt enlarged. The neck of the uterus is also thicker, softer, and more elastic, than before conception. The fundus uteri can sometimes be distinctly perceived above the brim of the pelvis at the end of the third month, but more frequently it cannot before the end of the fourth. About twelve weeks from the period of impregnation, the circulation of the blood in the walls of the uterus can occasionally be heard; but the pulsations of the fœtal heart are seldom perceptible before the fifth month. The body of the uterus, after the middle period of pregnancy, continues to enlarge till the end of the ninth month, while its cervix is gradually becoming shorter, and the orifice thicker and softer. The umbilicus protrudes, and white lines are seen on the sides of the abdomen. Not only can the sound of the fœtal heart, and the pulsation of the uterine bloodvessels, be distinctly heard during the latter month, but the movements of the fœtus can be felt by applying the hand over the uterus. The areolæ become broad and dark, and the glands around the nipples enlarged, and milk is often secreted.

At the end of the ninth month, if the abdominal parietes be cut open soon after death, and before the liquor amnii has escaped, the uterus is seen of a pyriform shape, like a great muscular sac half distended, occupying the whole hypogastric, umbilical, and epigastric regions. The small intestines and omentum cover its fundus, and on the sides it is surrounded by the great intestines. The peritoneum which covers the anterior surface of the uterus is in immediate contact with the peritoneum lining the abdominal muscles. The nates and head of the fœtus cause its soft plastic walls to project externally wherever they are situated within ; and not unfrequently the uterus stretches out much more on one side than the other. The figure of the uterus is also modified by all the parts which surround it, especially by the spine, brim of the pelvis, and the abdominal muscles, which, pressing it before and behind, flatten the anterior and posterior surfaces. In the erect position of the body, especially if the abdominal muscles are relaxed, the fundus uteri falls forward, so that the axis of the uterus forms a great angle with the spinal column and brim of the pelvis, and approaches the horizontal line. A dull sound is emitted by the gravid uterus on percussion, and a clear sound by the intestines around it. Ovarian cysts and tumours likewise emit a dull sound: from this circumstance, and from the unequal resistance they afford to the hand, such morbid enlargements are more fre-

Fig. 28.



quently mistaken for the gravid uterus than any other uterine tumours.

In the preceding figure from Dr. Hunter are represented the gravid uterus and its contents, and the vagina, at the beginning of the fifth month of pregnancy. The uterus is opened, showing the decidua, through which the fœtus appears in its usual attitude, with the head over the cervix. One turn of the navel-string is

Fig. 29.

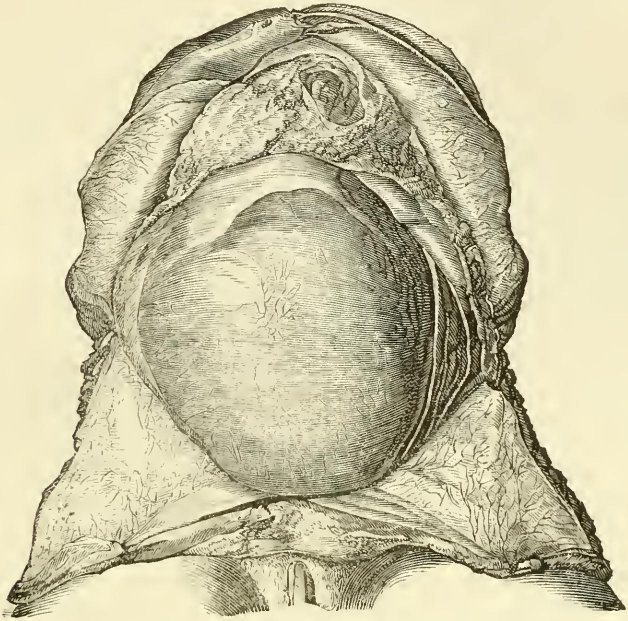
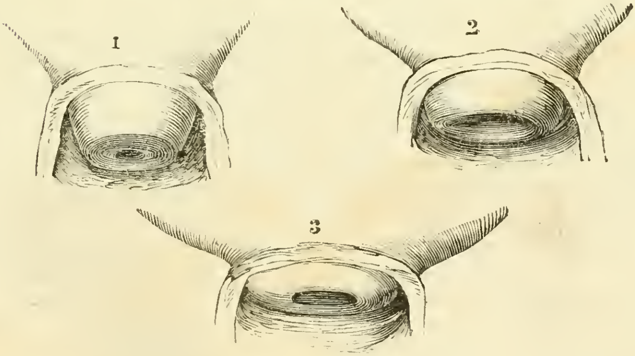


Fig. 30.



round the neck, and another twisted round the left ankle, and the left arm is applied over the face. The decidual cavity is not completely obliterated. The cervix is considerably shortened, and the lips thickened.

From this cast of Dr. Hunter's, upon the table, and from this engraving, you will form a correct idea of the size, situation, and general appearance, which the gravid uterus presents at the end of the ninth month.

These diagrams, Fig. 30, (from Maygrier,) represent nothing but the shortening of the cervix in the progress of pregnancy. 1, is the os uteri in the early months; 2, shows the cervix uteri in the seventh month; and 3, the state of the cervix when nearly obliterated before labour commences.

Dr. Montgomery's 2d figure, Plate IX., shows the state of the os uteri in the seventh month far more accurately than these figures, with the Nabothean glands developed and prominent, and a notch in the orifice from previous delivery.

The middle coat of the human gravid uterus is evidently composed of muscular fasciculi, mixed up with cellular membrane, bloodvessels, absorbents, and nerves. It is easy to demonstrate the existence of muscular fibres in the uteri of quadrupeds, and to trace them proceeding in a longitudinal direction principally from the cornua to the body of the uterus, where they become so interlaced that it is impossible to trace them any further, and show their course satisfactorily. In the human uterus it is much more difficult to trace the course and arrangement of the muscular fasciculi, even more difficult than in the heart, and they present little else, as Dr. Hunter has observed, but irregularity and confusion. "In a woman," he says, "who died seven days after delivery, I gave up the uterus to the examination of the muscular fibres, and traced them very carefully. I stretched it gradually in warm water, then inverted it, to have a full view of its inner surface. The remains of the decidua had been melted down, and passed off with the lochia, so that the fasciculated stratum of muscular fibres appeared to be bare, and to make the internal surface of the uterus. In a great number of places, but particularly where the placenta had been fixed, the fasciculi left oval spaces between them for the passage of arteries and veins, somewhat like those separations in the tendinous fibres of the abdomen and loins where vessels pass out to the cellular membrane and integuments. The cervix uteri, where the penniform rugæ are situated, had not such regular nor so large fasciculi as the rest of the uterus. In the body of the uterus the fibres were very regularly circular. The fundus was made up of two concentric circular planes of fibres, at the very centre of which was the orifice of the fallopian tube. The better to conceive this arrangement of the internal muscular fibres, we may suppose each corner of the fundus uteri, where the tube is inserted, to be stretched or drawn out, so as to make two horns, or a bifid uterus, as in the quadruped; then, if we understand the inner fibres to be circular in every part of the uterus, we understand clearly how they will be circular in the human uterus upon its body, and likewise circular and concentric at each corner of the uterus. When this internal stratum was removed, the fasciculated appearance and regular direction of the fibres was less and less apparent in proportion as I dissected outwards; which seemed, in a great measure, to be owing to the infinite number of the branches and communications of the large veins."

The uterus and its appendages are supplied with blood from the spermatic and hypogastric arteries. The spermatics, after sending branches to the tubes and ovaria, pass down to the uterus, and there anastomose on its sides with the uterine branches of the hypogastrics. You have seen, from injected preparations, that the upper part of the uterus is chiefly supplied by the spermatic arteries, and the body and cervix, and vagina, solely by the hypogastrics. At the full period of pregnancy all these arteries and veins of the uterus are greatly enlarged. When the arteries, which are always tortuous, reach the uterus, they do not run any distance under the peritoneum, but immediately plunge into the muscular coat, and pass toward the inner surface, and especially to the part where the placenta is attached, ramifying as they proceed. Those branches which reach the lining membrane terminate in the tortuous canals in the placental decidua. Those which do not arrive at the inner surface ramify upon the coats of the veins. The veins appear to be enlarged even in a still greater degree than the arteries. In no organ of the body does there exist such a vast collection of large veins as in the gravid uterus at the full period. If the veins could all be dissected out and put together, they would form a membranous expansion of great extent; so great that I am almost afraid to state the extent of surface which I believe they would cover. They are also, like the arteries, chiefly situated in that part of the uterus where the placenta is attached; and if the placenta be removed, you will see the veins opening into the cavity of the uterus by large oblique apertures with smooth edges. In this preparation the placenta is partially separated, and bristles have been introduced into these valvular-like venous openings in the lining membrane. These veins have no proper valves, so that if water, or any fluid, be thrown into the trunks of the hypogastric and spermatic veins, it will flow in a full stream into the cavity of the uterus. It is in this way, I conceive, and also from the exposed arteries, that such immense quantities of blood are often discharged in so short a time from the uterus during labour. In the uteri of some great quadrupeds, as the mare, the veins have valves, but not so perfect as to prevent injections passing from their trunks to their branches. If you trace the veins in the human uterus from these smooth openings in the lining membrane, you will see them entering obliquely into one another, and increasing in size as they reach the surface and sides of the uterus. I have filled the whole venous system of the uterus by tying the trunks of the spermatic and hypogastric veins, and pouring injection into the cavity of the uterus.

In this gravid uterus at the full period, the aorta and its branches, and the vena cava and the iliac veins in the muscular coat, are filled with injection, and you can see how very large the veins are in the wall of the uterus to which the placenta is attached. From this preparation you will easily perceive how readily the venous circulation in the uterus and placenta may be interrupted by all the different derangements of function in the thoracic and abdominal viscera, and how important it must be to obviate all obstructions in these during pregnancy.

Dr. Hunter states, that Mr. Cruikshank was the first who observed, at the Anatomical School of Great Windmill Street, the lymphatics in the gravid uterus, and that he injected them with great success in several subjects. "They are more numerous," he adds, "and many of them larger than could be imagined: from which it is manifest that a copious absorption is carried on in the uterus towards the mother. The lymphatics pervade its substance universally: its peritoneal coat appears, like that of a calf's spleen, to be interwoven with a crowded plexus of these vessels; and where they get to the sides of the uterus, when filled with mercury, some of them are even larger than a goose-quill. Some are remarkably varicose, or enlarged at particular places. They pass from the sides of the uterus, many with the spermatic vessels, but the greater number and the larger with the hypogastrics. Of these last some pass into glands on the side of the vagina, others meet with no glands till they have reached the side of the pelvis, when they run into the glands of the iliac plexus; from both of which they pass into the lumbar plexus, where they are lost among the absorbents of the lower extremities, and the external parts of generation. Besides the lymphatic vessels of the uterus, there are others, as we hinted above, belonging to the ovaria and fallopian tubes, which follow the course of the spermatic arteries and veins. They anastomose with the lymphatics of the uterus, and terminate in glands which are placed upon the sides of the lumbar vertebræ, near the origin of these bloodvessels: here they become mixed with the lymphatics of the lumbar plexus, and enter with them into the lower end of the thoracic duct. The spermatic lymphatics enlarge during pregnancy, in the same manner as the bloodvessels: and for this reason they are both readily seen and injected. The reason why the bloodvessels, lymphatics, and nerves of the ovaria, and the fallopian tubes, have their origin in the loins, is the same with that of the origin of similar vessels and nerves in the male; they are not placed in the cavity of the pelvis in the early fœtal state, but upon the psoæ muscles, some little way under the kidneys. It is natural, therefore, that these vessels and nerves should arise near the vessels and nerves of these organs." It is here said that the absorbents pervade the substance of the uterus universally, but their course and structure are not described, and it is not stated that they were traced to the inner surface, and that they had valves. When at Glasgow some years ago, I neglected to inquire about these preparations made by Mr. Cruikshank, whether they had been preserved in the Museum. If they had, I think Dr. Burns would have described the absorbents of the uterus more minutely than he has done. He says merely, that they are large and numerous. Having sacrificed all the gravid uteri which I have met with to nerves, and bloodvessels, and other structures, I regret extremely that I have no preparation to demonstrate the absorbents of the human gravid uterus, and I have never seen a preparation in which they were injected. There were some, I am informed, in the collection of Sir Charles Bell, which went to Edinburgh, but I have no recollection of them. I have often traced absorbents with the spermatic vessels to the uterus, and also with the hypogastric, but never into the substance of the uterus to any distance, and I do not know anything of their course except from what I have seen in cases of uterine inflammation after delivery, where they were distended with pus, and where they appeared to accompany the veins, had a beaded appearance, with numerous valves, and their coats were thin and transparent. They are seen distended with pus in this drawing, and in these coloured plates of Cruveilhier and Carswell. There are two views of the healthy absorbents of the uterus in Mascagni's plates, and also in M. Moreau's work, which I now show you.

Malpighi describes the absorbents of the uterus in some quadrupeds, and he says they form a great system of vessels. In this gravid uterus of the mare, now before you, they have been very successfully injected with blue size, and their course traced from the horns of the uterus down to the cervix accompanying the trunks of the uterine branches of the hypogastric veins. You will see that the trunks of the absorbents chiefly follow the veins, and that they are provided with numerous valves, which are so perfect, that neither air, mercury, nor size, can be made to pass into them in the retrograde direction. I introduced first a small blowpipe into one of the branches in the right horn, and the air ran forward and filled the whole vessel, which was perfectly transparent to the neck of the uterus. Having succeeded in filling them with air, I did so with mercury, and it also flowed forward, but it was too heavy, and soon burst through their delicate coats. Size being much lighter, after allowing all the mercury to escape, it was thrown in, and has been retained, and all the absorbents, at least all the principal branches, are filled with blue size, and present a very beautiful appearance. Small arteries injected with vermilion, and even filaments of nerves, are distinctly seen ramifying upon the coats of the absorbents. Several inches of one of the absorbent trunks have been cut out and suspended in spirit to exhibit this, and it forms an interesting preparation, which I now show you. I thought this was the first time the arteries of the coats of the uterine absorbents had been seen, but I was mistaken, for Cruikshank describes the arteries of these vessels. I believe, however, this is the first time filaments of nerves have been seen on the coats of the absorbents, which proves that they have nervi and vasa vasorum, like bloodvessels. Under the peritoneum of the left horn of this uterus, you can see numerous small absorbent vessels entering a sac about the size of a large pin's head: from this sac you can see three absorbent vessels passing out, which have also been filled with blue injection, and which run forward about half an inch, and enter another oblong sac about twice the size of the first. Numerous minute absorbents enter this second sac, which is much thicker than any of the absorbents entering it, or indeed than the trunk of the absorbents near the neck of the uterus. From the second lymphatic sac a large absorbent vessel passes out, which proceeds down to the body of the uterus, receiving numerous other branches, and gradually enlarging till it attains the size of a small goose-quill. I suspect that these lymphatic sacs are analogous to those which exist in reptiles, which are called lymphatic hearts, and that they collect and propel the fluid along the absorbents.

If the absorbents of the human uterus are equally developed during gestation, and Dr. Hunter's description of them makes it certain that they are so, it is obvious that they are intended to perform another function besides that of carrying on "a copious absorption in the uterus towards the mother during pregnancy." The sudden removal of the uterine structures after delivery, by absorption, is probably the most important office they perform, and the cause of their enlargement to such a vast size during the latter months of pregnancy.

LECTURE XI.

HISTORY AND DEMONSTRATION OF THE NERVES OF THE UTERUS.

From the sensibility and contractile power of the uterus, Galen inferred that it must be supplied with nerves, but he says they are extremely small, compared with the size of the organ. He knew that the uterus and bladder received not only nerves from the great sympathetic, but that they were supplied with branches from the spinal or sacral nerves. From the time of Galen till the middle of the sixteenth century, it is probable that the nerves of the uterus were not examined by any anatomist. Vesalius then stated that small twigs of nerves on each side proceed to the neck of the uterus and lower part of the fundus from the sacral nerves, and that the highest portion of the fundus receives some very minute branches from the great sympathetic nerve. The nerves of the uterus were described by various writers during the latter part of the sixteenth century, but in an equally or still more imperfect manner. The anatomists of the seventeenth century also allude to them, but with no greater accuracy or precision, and it is certain from the works of Willis, that he had traced the great sympathetic and sacral nerves to the neck of the uterus, and no further, and that he was unacquainted with the branches of the great sympathetic which are sent off from the renal plexus on each side, and accompany the spermatic vessels to the ovaria, fallopian tubes, and uterus. In De Graaf's seventh Plate, which I now show you, the trunk of what he states to be a nerve is represented passing on each side into the posterior surface of the neck of the unimpregnated uterus, and ramifying like the branches of a tree over the body and fundus. Saltzman and Reuss, Vater, Rast, Daventer, and Winslow, all state that the uterus has nerves; but their works contain no new facts on the subject. In this plate of Walter, the view of the nerves of the uterus is extremely defective, a few small filaments only being seen passing into the lower part of the orifice and cervix from the upper part of the hypogastric plexus. The fundus and body of the uterus are left, you see, covered with peritoneum and destitute of nerves. The spermatic nerves are not represented. Haller, likewise, appears to have confined his attention to the nerves of the unimpregnated uterus, and with no greater success than Walter and other anatomists had done. Dr. William Hunter was the first who examined the nerves of the gravid uterus, and suspected them to be enlarged in proportion to the vessels. "I cannot," he observes, "take upon me to say what change happens to the system of uterine nerves from utero-gestation, but I suspect them to be enlarged in some proportion, as the vessels are. Upon this occasion we profess only to give the anatomy of the gravid uterus; yet, since the descriptions of the nerves of the uterus which I have read seem to me unsatisfactory, I shall so far go beyond my subject as to describe the hypogastric nerves, such as they appeared to me in a female subject carefully dissected for that purpose.*

All the uterine nerves come from the intercostals, and pass in the form of plexuses with the bloodvessels, as in the other abdominal viscera; so that there is a spermatic and hypogastric plexus of each side attending the vessels of the same name. They are principally the branches of two large cords of the intercostals, which run down before and on each side of the aorta in the abdomen, much in the same manner as the trunks of the intercostals run down upon the sides of and behind that artery. On the left side this large cord comes down from the semilunar ganglion, partly as a continuation of the anterior cord of the intercostal, from the part where it is forming the semilunar ganglion, and partly as a plexus of nervous filaments coming down more forwards from the ganglion itself. This cord passes down below the beginning of the renal artery, all along the sides of the aorta. In its way it receives branches from the intercostal, and gives off branches, so that it has the appearance of a plexus, although the principal cord can always be distinguished. It gives off the renal plexus, which is situated upon the side of the uppermost vertebra lumborum, and passes to the sinuosity of the kidney, behind the renal vein; but both before and behind, and above and below, the renal artery. Opposite to the third vertebra lumborum the cord gives off two pretty large branches, and some small filaments of nerves which run down with and before the spermatic artery. The spermatic plexus may be distinctly traced with the artery into the ovarium and adjacent parts at the upper part of the broad ligament.

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* See Introduction, p. 20, note, for a corrected view of Dr. Hunter's statements on this point. "No injustice," says Dr. Lee, in the last paragraph of his *Corrigendum*, "has resulted from this mistake; but," he adds, "it is not improbable that a recent editor of Dr. Hunter's work on the Gravid Uterus has been led by it to commit the following egregious error: — 'Indeed, when we carefully peruse the last paragraph of Dr. Hunter's chapter on this subject' (which is quoted verbatim Lecture XI. page 101), 'we cannot help coming to the conclusion, that it still contains *the chief, if not all, of what we yet know for certain about the nerves of the gravid uterus.*'"

Immediately below the origin of the spermatic plexus, opposite to the same vertebra lumborum, two large branches come from the trunk of the intercostal nerve in the common direction of these communicating branches, viz., forwards, downwards and inwards, which join the great cord, and make it large from this conjunction downwards. On the right side, the cord comes down from the semilunar ganglion, close to the root of the superior mesenteric plexus and artery, giving a few branches only to the renal plexus, and runs down on the right side of the aorta, as the other on the left. And on the right side, the renal plexus which comes chiefly from the semilunar ganglion as it passes towards the kidney behind the vena cava and renal vein — the renal plexus, I say, sends down the spermatic plexus behind the beginning of the renal, which soon joins and passes with the spermatic vessels of this side. The two cords, right and left, may be said to constitute a lumbar plexus all along the aorta, which makes the basis of the plexuses which accompany the branches of that artery; or they may be considered as the anterior cords of the intercostals in the abdomen. At the upper part of the fourth vertebra lumborum the right cord gives down a considerable branch with the iliac artery, which branching forms a kind of sheath-like plexus upon the artery in its way to the groin.

At the bifurcation of the aorta, the right and left cord unite upon the fore part of the aorta, and make a plexus from that part directly downwards, so far as the lower portion of the fifth vertebra lumborum, and then finally divide into what may be called the right and left hypogastric nerve. On the right side a pretty large branch comes from the trunk of the intercostal, on the side of the fourth vertebra lumborum, which, passing downwards and inwards behind the right iliac artery, joins the plexus of the two united cords before the last vertebra lumborum. The hypogastric nerve passes round the side of the pelvis, between the peritoneum and the hypogastric vessels and upon the inside of the ureter, at the middle of the side of the pelvis, where the nerves split into a double range of branches, viz., anterior and posterior. The posterior range goes to the side of the rectum, some branches passing to the back part, and others to the fore part of the gut; and the first and uppermost of those branches are manifestly reflected upwards upon the gut, directing their course towards the colon. The anterior range of branches is the largest, and may be considered as the continuation of the hypogastric nerve, in the form of a plexus: where the hypogastric vessels are passing to the side of the uterus and vagina, this nerve, situated behind them, spreads out in branches like the portio dura of the seventh pair, or like the sticks of a fan with many communications, which are sent to the whole side of the uterus and vagina. The uppermost branches pass upwards in the duplicature of the broad ligament, towards the fundus uteri. The branches, as they go to the lower part of the organ, pass less obliquely, then horizontally, and the lowest of all run downwards on the side of the vagina. The greatest crowd or number of these branches go to the os tincæ and the adjacent parts of the uterus and vagina." This is probably the only dissection that Dr. Hunter ever saw of the nerves of the uterus, and from this he suspected that they enlarge during pregnancy like the blood-vessels. In his engravings there is no representation either of the absorbents or nerves of the uterus.

Mr. John Hunter says twice, in his Works, that the nerves of the gravid uterus are not enlarged in the slightest degree during pregnancy. "The uterus," he observes, "in the time of pregnancy increases in substance and size probably fifty times beyond what it naturally is; and this increase is made up of living animal matter, which is capable of action within itself. I think we may suppose its action more than double; for the action of every individual part of this viscus, at this period, is much increased, even beyond its increase of size, and yet we find that the nerves of this part are not in the smallest degree increased. This shows that the nerves and brain have nothing to do with the actions of that part, while the vessels whose uses are evident increase in proportion to the increased size; if the same had taken place with the nerves, we should have reasoned from analogy." Mr. Hunter left no preparations of the nerves of the uterus to support this assertion, and at the beginning of the year 1838 there were no preparations in Great Britain showing the nerves of the human uterus dissected, either in the unimpregnated or gravid state, or in the uteri of any of the lower animals. Sir Astley Cooper then maintained that it was impossible for the nerves of the uterus, or the nerves of any other organ, to increase under any circumstances.

In 1822, Professor Tiedemann published a description of the nerves of the uterus, with two engravings. In the first the spermatic nerves are represented on both sides accompanying the spermatic arteries to the ovaria. The spermatic veins, and the nerves which follow them, are not seen. A few small branches of nerves from the hypogastric plexus are seen ramifying on the posterior and inferior surface of the uterus with the uterine arteries; the whole of the superior part of the uterus is covered with peritoneum. In the second plate some small branches from the left hypogastric nerve, before it enters the great ganglion at the cervix, are seen accompanying the left uterine artery on the left side of the lower part of the uterus. From Professor Tiedemann's description and plates it might be inferred that the human gravid uterus is more sparingly supplied with nerves than any other organ in the body. The fundus uteri, which is yet possessed of the greatest degree of contractile power, is, you see (in his plates), quite destitute of nerves. In 1823, Lobstein stated that the uterus both before and after conception had a very scanty supply of nerves. He says, "Rarissime in uteri substantiam tum vacui tum gravidi sese immittere videntur nervorum surculi." In 1829, Professor Osiander affirmed that the nerves of the human uterus had never been seen, either by himself, or by any other anatomist, and that he had been deceived by the authority of other scientific persons, when he stated that nerves were spread over the whole uterus.

On the 8th of April, 1838, while dissecting this gravid uterus upon the table of seven months, all the veins of which were injected, I accidentally observed what appeared to be the trunk of a large nerve proceeding upward from the cervix to the body of the uterus along with the right uterine vein, and sending off branches in its course to the posterior surface of the uterus, some of which accompanied the ramifications of the veins, and others were inserted into the peritoneum; this broad band, resembling a plexus of nerves, extended across the posterior surface of the uterus, and covered the nerve midway between the fundus and the cervix. On the left side the same appearances were seen, and several branches of the nerves accompanying the uterine vein were distinctly continuous with branches of the great plexus covering the body of the uterus. As all the bloodvessels and nerves had been cut away close to the neck of the uterus, it was impossible to trace these nerves on the body of the uterus back to the hypogastric and sacral nerves, and demonstrate their continuity with these; but I had no doubt that they were the uterine nerves enlarged by pregnancy. I first showed them to Mr. H. C. Johnson, who had likewise no doubt that they were ganglionic plexuses of nerves, although they had not been represented in Professor Tiedemann's plates. The preparation was placed in the museum of this hospital on the 1st October, 1838. Several eminent anatomists to whom I showed the preparation thought that I had been misled by appearances, and that they were absorbent vessels accompanying the veins and tendinous fibres spread across the posterior surface of the uterus.

On the 18th December, 1838, a woman in the sixth month of pregnancy died in St. George's Hospital, a few hours after the fœtus and its appendages had been expelled. The uterus was removed with all its bloodvessels and nerves remaining connected with it: the whole of the great sympathetic was taken out, and the nerves were carefully traced from their origins to the different parts of the uterus, while the preparation was covered with alcohol. About eight months were spent in treating the spermatic, hypogastric, and sacral nerves to the uterus, and their distribution over the organ. This could never have been accomplished, I believe, had the dissection been made in air, or water. If you examine this preparation, you will see, behind the uterus, the aortic plexus dividing into the right and left hypogastric nerves. These nerves soon subdivide into a number of branches to form the right and left hypogastric plexus. Each of these plexuses, after giving off several branches to the ureter, rectum, and uterus, descends to the side of the neck of the uterus, and terminates in a large oblong ganglion. The left hypogastric plexus first sends off from its upper and anterior part some small branches to the ureter. About midway between the aortic plexus and the ganglion at the cervix, the hypogastric plexus sends off several considerable branches directly into the upper part of the cervix uteri, which spread out under the peritoneum of the body of the uterus. The hypogastric plexus then, you see, gives off a large branch which passes between the ureter and uterus, to the trunks of the uterine veins and artery. This branch enlarges and becomes thin and broad as it approaches these vessels, and terminates in a great plexus of nerves, which completely encircles the vessels. This plexus of nerves surrounding the vessels is joined below by several branches which proceed from the anterior and superior part of the ganglion, and which pass on the outside of the ureter to the plexus around the vessels. All this is clearly seen in the preparation. But if you draw the ganglion a little aside you will see several branches proceeding from its inner surface to the plexus around the bloodvessels, which run on the inside of the ureter, so that a loop or complete ring of nerves surrounds the ureter, as well as the uterine artery and vein. From the plexus surrounding the vessels three large nerves proceed upward with the vessels to the upper part of the uterus, enlarging as they ascend. These are evidently the same nerves which you saw in the last dissection. The posterior branch sends off in its course smaller branches, which accompany the ramifications of the uterine vein, on the posterior surface of the uterus, and spread out upon the inner surface of the peritoneum. Passing upwards beyond the junction of the spermatic with the uterine veins, and running between the peritoneum and great plexus situated on the body of the uterus, it spreads out into a web of thin broad branches and slender filaments, some of which are inserted into the muscular coat and peritoneum, and others follow the veins and arteries to the fundus uteri, and pass with the vessels into the muscular coat of the organ. The middle and anterior branches closely adhere to the uterine vein as they ascend, and form around several plexuses which invest the vein. From these plexuses branches are sent off to the anterior surface of the uterus. These nerves, you see, ascend and closely unite with the great transverse plexus on the body of the uterus. This plexus on the left side arises near the mesial line on the back part of the uterus, midway between the fundus and cervix, from a mass of fibres which adhere so firmly both to the peritoneum and muscular coat that it is difficult precisely to determine their arrangement. From these fibres the plexus proceeds across the uterus in the form of a thin web, to the point where the spermatic vein is leaving the uterus. After closely uniting with the nerves accompanying the uterine vessels, this plexus proceeds outwards to the round ligament, becoming less firmly adherent to the peritoneum, where it unites with a plexus on the anterior surface of the uterus, and spreads out into a great web under the peritoneum. This plexus is loosely attached through its whole course to the subjacent muscular coat, by soft cellular membrane.

From the second, third, and fourth sacral nerves, but chiefly from the third, branches pass into the posterior border of the ganglion at the cervix, and are lost in its mass. From the inner surface of the ganglion numerous small soft nerves are given off to the neck of the uterus, some of which ramify under the peritoneum, and others pass deep into the muscular coat. From the anterior and inferior borders of the ganglion many large nerves are given off to the bladder and vagina, and from its posterior margin to the rectum.

On the left side the spermatic nerves form a plexus around the spermatic artery for about two inches from its origin. A small branch is then sent off from the spermatic artery to the ureter, accompanied with some filaments of nerves. The spermatic artery then passes down between the spermatic veins, and some of the nerves leaving the artery get on the outside of the veins, and numerous filaments are observed ramifying on the coats of the veins, and also upon the absorbents, and forming loops around them. Branches of nerves are then sent to the fallopian tube and to the ovarium, at the base of which a great plexus is formed. The spermatic nerves then appear to enlarge as they proceed towards the uterus along with the artery and veins, and in their course filaments are sent to the peritoneum and to the veins of the ureter: some filaments pass down along with the spermatic artery to anastomose with the nerves accompanying the uterine arteries and veins, and other branches pass to the round ligament, and the great plexus on the body of the uterus.

On the right side of the uterus, the distribution of the hypogastric, spermatic, and sacral nerves, does not differ essentially from what you have seen on the left side. The form and situation of the great plexuses on the body of the uterus are, however, more distinct, and they present the appearance of a white, pearly fasciculated membrane, about a quarter of an inch in breadth, proceeding from the mesial line, at right angles, to the nerves accompanying the bloodvessels across the body of the uterus to the round ligament, where it unites with a plexus on the anterior surface of the uterus. Numerous branches are sent off from the upper and lower borders of the posterior plexus to the muscular coat of the uterus. An extensive and intimate union at various points is distinctly perceptible between the branches sent off from this plexus and the branches of the nerves accompanying the uterine arteries and veins, and those which proceed from the hypogastric plexus and cervical ganglion to spread out and form a great nervous web under the peritoneum on the posterior surface of the uterus. On the anterior and upper part of the neck of the uterus there is a great mass of reddish-coloured fibres, firmly interlaced together, resembling a thin, broad ganglion of nerves, into which numerous large branches of the hypogastric nerves on both sides enter, and to which they firmly adhere. From the upper part of this fibrous substance there passes up, under the peritoneum over the whole anterior surface of the uterus, a great plexus, the branches of which pass into the muscular coat, or unite with those nerves proceeding with the bloodvessels to the upper part of the uterus. Prolongations of this plexus also extend to the round ligaments, and some of its filaments unite with those of the spermatic nerves. The nervous structures now described, and which you have seen, have been represented by Mr. Perry in the two drawings I now show you.

From the form, colour, general appearance, and vascularity of these plexuses on the body of the uterus, and the resemblance they bear to ganglionic plexuses of nerves, and from their branches actually anastomosing and coalescing with the spermatic, hypogastric, and sacral nerves, I was led to conclude, on first discovering them, that they were nervous ganglionic plexuses, and constituted the special nervous system of the uterus, enlarged by pregnancy. This dissection was examined by many of the most eminent anatomists in London, and they all admitted that the great plexuses on the body of the uterus were continuous with the spermatic, hypogastric, and spinal nerves. In a paper read to the Royal Society (December 12th, 1838), I described the appearances displayed in these dissections and drawings. It was referred by the Committee of Physiology to Professor Owen and Mr. Kiernan, and these distinguished anatomists decided, from an examination with the microscope of small portions of the plexuses under the peritoneum, which had long been immersed in rectified spirit, that they were bands of elastic tissue, and not plexuses of nerves. The evidence furnished by the actual continuity of the plexuses with the great sympathetic was considered of no weight, compared with the microscopic appearances. The microscope was the only test. "The tissue of the broad, white, reticularly intercommunicating bands of fibrous matter, resembling nerves of the uterus," observes Professor Owen, "consisted of minute fibres, which were solid, smooth, equal-sized, cylindrical, and nearly transparent, irregularly interblended in their course ; their diameter does not exceed one ten-thousandth of a line. These bands correspond in structure with the fibrous modification of cellular tissue. The component fibres did not form tubes, nor were their interspaces filled with the primitive granules, or cells, of the nervous tissue. In the nerves of the spinal system, the primitive fibres of the neurilema, which closely resemble those of the ordinary cellular and fibrous tissues, are arranged in the form of tubes, and can be distinguished into cylinder and contents. The same structure, on a minute scale, exists, according to Valentin, in the sympathetic nerves ; but according to the observations of Remak and Schwann, the component fibres form solid bands, and are of a more transparent character than in the spinal nerves, but marked occasionally with swellings, and having granules in the interspaces. I consider the difference between the nerves of the sympathetic and the fibrous cellular tissue to consist, as regards their microscopic character, in the greater proportion of granules or cells in the interspaces of the fine, reticularly interwoven, component fibres of the nervous band ; and this difference I believe to exist between the two nerves of the sympathetic system and the white bands of fibrous matter which connect the peritoneum with the muscular substance of the womb, and which resemble a plexus of nerves." The communication was withdrawn from the Royal Society, and many great anatomists hailed the result as the end of the nerves of the uterus — when the investigation had scarcely commenced.

But several of the most experienced and accurate microscopical observers in this country soon after examined other portions of the same structures at my request, and arrived at a totally different conclusion. Mr. Kiernan was afterwards requested to state the grounds upon which he had decided, but he refused to do so. The results of the investigations made by Mr. Dalrymple with the microscope on the uterine nerves in the recent state were communicated to me two years after, in the following interesting letter, which I cannot refrain from reading to you, and which you may read with advantage to those who still assert that it has been proved by the microscope that the great ganglionic plexuses of nerves under the peritoneum of the uterus, which have now been demonstrated to you, are nothing but bands of elastic tissue, gelatinous tissue, or cellular membrane.

My Dear Sir, — After having seen, and very carefully examined, some weeks since, your very beautiful preparations of the nerves of the impregnated uterus, and after having felt convinced, by their continuity, colour, texture, and mode of distribution, that they really were nerves, I was a good deal surprised to hear from you and others that their identity had been doubted ; I was aware that it would have been worse than useless to have asked you for a portion of such suspected cords, to submit to the microscope, knowing that they had been very many months immersed in strong alcohol. It would neither have been fair to you, nor satisfactory to me, to have made such an attempt at solving the question.

Being anxious, however, to satisfy myself upon the subject, I obtained an uterus unimpregnated, and while it was quite recent I traced several nerves, which I recognised, from their situation round the ureter, and upon the body of the uterus, to be similar to some you had previously pointed out to me. These filaments I submitted to the microscope, and used a very beautiful eighth of an inch object-glass, made by Ross. I found that it was impossible, with the most careful dissection, to detach any filament of nerve without including a quantity of cellular and elastic tissue; so that although the tubular portion indicating the nerve was distinct, yet it was surrounded by innumerable extremely minute threads, coiled and contorted, such as one finds the component of elastic tissue, and the ultimate element of cellular membrane.

Under slight pressure, however, the tube was plainly discernible, containing granular matter, not uniformly distributed, but collected in minute masses, at intervals. Small bloodvessels were also seen, here and there, with blood-discs within them, which served to indicate the difference between the nervous and vascular tubes, and thus to avoid the possibility of error.

Being, however, aware that some of the most distinguished foreign microscopical anatomists had differed as to what was the real characteristic of nerves of the sympathetic system, I should not have troubled you with this communication had I stopped here. Feeling, from this discordance of opinion, that there was no absolute test, or at least one which was not open to cavil, I thought to try a comparison of the uterine nerves with those that undeniably belonged to the ganglionic system. I traced, therefore, some nerves upon the surface of the stomach up to the great ganglion that gave them origin; and I selected some also from the small intestine. These I submitted to the same microscopical power, under the same circumstances of light, and pressure, and medium.

In all of these I observed the tubular part filled with granular matter, and similarly collected in minute masses. I also observed that each tube was surrounded by the minute serpentine threads before described. In fact, so closely did they agree in every particular with the appearances presented by the uterine nerves, that it would have been impossible to distinguish the one from the other.

Thus, by comparing the unknown with the known, despite the want of any absolute test, I feel perfectly satisfied of the true nervous character of the very beautiful plexuses which you have so patiently and with so much labour developed.

Admitting, then, this intricate structure to be really nervous, it is a matter of no marvel that they increase in size during pregnancy. It would, indeed, be wonderful, if the nerves alone remained stationary, while the muscular and cellular, the serous and mucous, and the vascular tissues, increased, as it is notorious those structures of the uterus do, during the period of child-bearing.

If, as is also indisputable, nerves shrink and atrophy when the function of an organ they supplied is lost or destroyed, is it singular that the uterine nerves should increase, when that organ rouses itself from inaction to one of the most extraordinary exemplifications of temporary functional vigour that the animal œconomy can any where exhibit? Pardon me this prolixity, and believe me, — My dear sir, yours very faithfully,

John Dalrymple.

Holles Street, April 21, 1841.

Subsequent dissections, which I made in 1839 and 1840, of the unimpregnated uterus, and of the gravid uterus, in the third, fourth, sixth, seventh, and ninth months of pregnancy, and after delivery, enabled me not only to confirm the accuracy of the preceding observations, but to discover the important fact, that there are many ganglia formed on the uterine nerves, and on those of the vagina and bladder, which enlarge with the coats, bloodvessels, nerves, and absorbents of the uterus during pregnancy, and which return after parturition to their original condition before conception takes place. The greater number of these dissections are now placed before you upon the table for your examination; and by comparing the ganglia and nerves of the unimpregnated uterus with those of the gravid uterus, you will require no further evidence to convince you that the nerves of the uterus grow during pregnancy with the other structures. If you compare these dissections with one another, you will not only be convinced of this fact, which Mr. J. Hunter denied, but you will be satisfied that it is not in the power of any anatomist, however patient and dexterous, to dissect or arrange elastic tissue or cellular membrane so as to represent the regular distribution of the system of nerves seen in these preparations. The web of Arachne, to borrow the words of Sir Charles Bell, is the same in all of them — it appears in every one of them. When Mr. Lawrence examined these preparations, which he did with the utmost care, in the performance of his duty as a Member of the Council of the Royal Society, he said, "one dissection might have left me in doubt respecting the nature of these great ganglia and plexuses, but the series produces the most complete conviction in my mind. It is the nervous system of the uterus, and can be nothing else. The microscope is not required to discover it. It is seen much better with the naked eye than with any magnifier." Dr. M. Hall, after closely examining this series of dissections, said, "It is the nervous system of the uterus which you have displayed. Never doubt this for a moment, whatever opposition or contradiction you may encounter. I will never believe my eyes again, if these great plexuses on the body of the uterus are not nervous plexuses."

On the 17th of June, 1841, having obtained all the evidence that multiplied dissections and microscopical observations could furnish, I presented a second paper to the Royal Society, on the Nervous Ganglia of the Uterus, which has been published in the second part of the Philosophical Transactions of the last year, with two engravings. In this communication the following account is given of the ganglia and nerves of the uterus, as displayed in these dissections now before you: —

The uterus and its appendages are wholly supplied with nerves from the great sympathetic and sacral nerves. At the bifurcation of the aorta, the right and left cords of the great sympathetic nerve unite upon the anterior part of the aorta, and form the aortic plexus. This plexus divides into the right and left hypogastric nerves, which soon subdivide into a number of branches to form the right and left hypogastric plexus. Each of these plexuses, having the trunk of the hypogastric nerve continued through its centre, after giving off branches to the ureter, peritoneum, rectum, and trunks of the uterine bloodvessels, descends to the side of the cervix, and there terminates in a great ganglion, which, from its situation and relations, may be called the hypogastric ganglion, or utero-cervical ganglion.

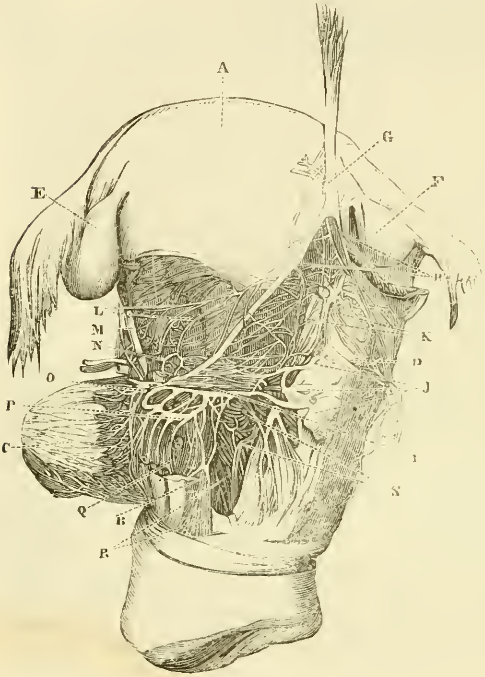
This ganglion is situated by the side of the neck of the uterus, behind the ureter, where it is passing to the bladder. In the unimpregnated state it is usually of an irregular triangular or oblong shape, with several lobes or processes projecting from it, where the nerves enter or are given off from it. In the long diameter it usually measures from half an inch to three quarters of an inch, varying in dimensions with the size of the nerves with which it is connected. The hypogastric ganglion also consists of cineritious and white matter like other ganglia, and gray and white nerves issue from it, which proceed to the rectum, bladder, uterus, and vagina. It is covered with the trunks of the vaginal and vesical arteries and veins, and the ganglion has an artery of considerable size, which enters it near the centre, and divides into branches, which accompany the nerves given off from its inner surface, and from its anterior and inferior borders. The hypogastric nerve, after separating into a plexus, enters its upper edge, and branches from the third and other sacral nerves to its posterior border, and the whole of its outer surface. None of the branches of the sacral nerves pass over the ganglion to the bladder, though some of them enter its anterior edge where the vesical nerves are given off.

From the inner and posterior surface of each hypogastric ganglion, numerous large nerves are given off, which go backwards to anastomose with the hemorrhoidal nerves, which accompany the arteries to the rectum, and pass with them between the muscular fasciculi of the organ. An extensive connection is thus established between the two hypogastric ganglia and the nerves of the rectum; and many large, broad nerves pass from the posterior and inferior part of these ganglia to ramify on the sides of the vagina, and between the vagina and rectum.

From the inferior border of each hypogastric ganglion several fasciculi of small nerves are sent off, which pass down on the sides of the vagina, and enter several large flat ganglia about midway between the os uteri and ostium vaginæ. From these vaginal ganglia innumerable filaments of nerves, on which small ganglia are formed, extend downwards to the sphincter, where they are lost in a white, dense, membranous expansion, from which they cannot be separated without laceration. From this great web of ganglia and nerves on the sides of the vagina, by which it is completely covered, numerous branches are sent to the sides of the bladder, which enter it around the ureter. All these nerves of the

Posterior and Lateral View of the Gravid Uterus in the Fourth Month of Pregnancy, of the Vagina, Rectum, and Bladder, with their Ganglia and Nerves.

Fig. 31.*



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* A, the fundus and body of the uterus covered with peritoneum.

B, the vagina. D, the rectum.

C, the bladder. E F, the ovaria.

G, the great sympathetic nerve, where it divides into the two hypogastric nerves and plexuses. The arteries and veins of the great sympathetic are all injected in the preparation from which the drawing has been made. A little above the bifurcation of the great sympathetic nerve there is a deposit of cineritious matter in its substance, and the nerve itself is enlarged as high as the kidneys.

H, the right and left hypogastric nerves and plexuses. The artery of the right is injected, and accompanies the nerve to the great ganglion at the cervix, in which it terminates.

I, the left hypogastric or great utero-cervical ganglion, with an artery passing into it near the centre.

J, the third and other sacral nerves, sending numerous large branches into the posterior border of the ganglion, and the whole of its outer surface.

K, the hemorrhoidal nerves accompanying the arteries to the rectum, and sending vagina are accompanied with arteries, and they often form complete rings of nerve around the branches of the great veins.

From the anterior margin of each hypogastric ganglion large white and gray nerves are sent off, some of which pass on the outside, and others on the inside, of the ureter, and these branches meet in front of the ureter in a ganglion which may be termed the middle vesical ganglion. There are other two ganglia formed on these nerves — one between the uterus and ureter, and the other between the ureter and vagina. These may be called the internal and external vesical ganglia. The ureter is thus enclosed within a ring of nerve which resembles the œsophageal ganglion in some of the Invertebrata. The trunks of the uterine artery and vein are likewise encircled by a great collar of nervous matter, between which and the hypogastric ganglion several large and some small branches pass.

The internal vesical ganglion, which usually has a flattened or long bulbous shape, is formed entirely upon the nerves which pass from the hypogastric plexus and ganglion, and run between the uterus and ureter. It has an artery which passes through its centre. It first gives off a large branch to the ring of the nerve or ganglion which surrounds the uterine bloodvessels; it then sends branches to the anterior part of the cervix uteri, and afterwards a great number of small filaments to the muscular coat of the bladder, where it is in contact with the uterus. The internal vesical ganglion then sends forward a large branch which terminates in the middle vesical ganglion.

This ganglion sends off a great number of large nerves to the bladder. Some of these accompany the arteries, and can be seen ramifying with them upon the whole of the superior part, even to the fundus. Filaments of these nerves, scarcely visible to the naked eye, are seen ramifying in this preparation on the bundles of fibres occasionally forming loops, and inclosing them, or passing down between them, to the strata of fibres below. Some of the smaller branches of the middle vesical ganglion do not accompany the

numerous branches to anastomose with nerves sent off from the posterior edge of the ganglion.

L, branches of nerves with ganglia sent off from the left hypogastric nerve, which pass down on the inside of the ureter to the trunks of the uterine artery and veins, and enter ganglia which surround these bloodvessels.

M, the left ureter, with a nerve accompanying it, which passes into the vesical ganglion, situated on the anterior part of the ureter.

N, rings of nerve, surrounding the uterine bloodvessels.

O, the middle vesical ganglion, into which large nerves enter, which are sent off from the anterior border of the left hypogastric ganglion, and pass on the outside of the ureter.

P, broad flat ganglia, formed on the great plexus of nerves which covers the upper part of the vagina.

Q, the orifices of the divided veins of the vagina, which are completely encircled with ganglionic plexuses of nerves.

R, filaments of vaginal nerves passing under the sphincter.

S, large nerves covering the posterior wall of the vagina, and anastomosing with the hemorrhoidal nerves.

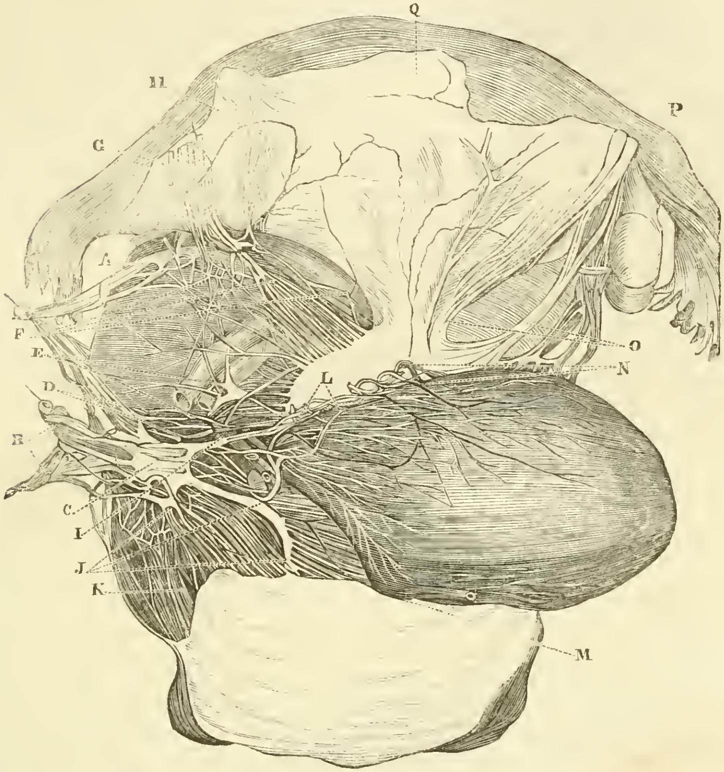
arteries, but are distributed at once to the parts of the bladder around the ureter.

The external vesical ganglion is formed entirely upon the nerves which proceed from the hypogastric ganglion, and pass on the outside of the ureter. This is a small, thin ganglion, the branches of which are sent immediately into the muscular coat of the bladder. It usually sends down a long branch to anastomose with the nerves and ganglia situated on the side of the vagina.

From the inner surface of each hypogastric ganglion numerous small, white, soft nerves pass to the uterus, some of which ramify upon the muscular coat about the cervix, and others spread out under the peritoneum to coalesce with the great ganglia situated on the posterior and anterior surface of the organ, which have been called the subperitoneal ganglia and plexuses. Large branches also go off from the inner surface of the hypogastric ganglion to the nerves surrounding the bloodvessels of the uterus, which accompany them in all their ramifications throughout its muscular coat. Other branches of nerves pass down from the ganglion between the vagina and bladder. The appearances presented at the end of the fourth month of pregnancy by the hypogastric ganglia, and the ganglia and nerves of the rectum, and also the great plexus of nerves situated on the anterior surface of the uterus, are seen, but very indistinctly, in the two following reduced engravings from the Philosophical Transactions.

But the whole nervous system of the uterus is not fully represented in these engravings, nor are they seen in the dissection from which they are taken. In a third communication to the Royal Society, which was read on the 16th of June, 1842, and which has been published, with an engraving, in the second part of the Philosophical Transactions of the present year, there are other great nervous structures described and represented. These have been displayed in the dissection of a gravid uterus at the end of the ninth month, all the bloodvessels of which have been injected, which is now placed before you on the table, and which I am anxious you should carefully examine and compare with the following description. Without looking at the preparation, or this elaborate drawing by Mr. Perry, I am afraid you will not be able to follow the description.

In this preparation the great sympathetic nerve sends numerous branches from both its cords to the trunk of the inferior mesenteric artery, which form a great plexus around it. These nerves accompany all the ramifications of the artery, but the greater number proceed with the hemorrhoidal artery to the rectum. The two cords of the great sympathetic, after giving off these branches to the inferior mesenteric artery, pass down before the aorta nearly two inches below its bifurcation, where they are united by several fine nervous filaments. But the cords continue distinct, and soon separating, each passes down behind the hypogastric bloodvessels to the neck of the uterus, and there terminates in the corresponding hypogastric or utero-cervical ganglion. The left cord of the great sympathetic, or, as it is usually called, the hypogastric nerve,



Anterior and Lateral View of the Gravid Uterus in the Fourth Month, and of the Vagina and Bladder.

Fig. 32.*

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* A, the right hypogastric nerve.
B, the sacral nerves.
C, the right hypogastric ganglion.
D, nerves from the hypogastric nerve to the ganglia on the bloodvessels of the uterus.
E, ganglia surrounding the uterine artery and veins.
F, ganglionic plexus, under the peritoneum on the fore part of the uterus.
G, filaments from this plexus passing out with the round ligament.
H, the round ligament.
I, the right ureter and trunk of the vaginal and vesical veins surrounded with nerves.
J, ganglia and nerves of the vagina.
K, nerves passing between the vagina and rectum.
L, ganglia and nerves of the bladder.
M, vaginal nerves passing into the bladder around the ureter.
N, bloodvessels and nerves of the upper part of the bladder.
O, plexus of nerves under the peritoneum on the left side of the uterus, the bloodvessels of which have not been injected.
P, filaments from this plexus passing out with the round ligaments.
Q, the peritoneum of the anterior part of the body and cervix of the uterus reflected upwards, to expose the ganglionic plexuses situated below.

enlarges greatly as it approaches the hypogastric ganglion. This ganglion is nearly two inches in breadth, and covers a great part of the cervix uteri. It appears to consist of six or seven smaller ganglia, which are united together by nervous cords. Each of these ganglia is a thick, solid, nervous mass, of an orange-white colour inclining to brown. Arteries which have been injected pass through these smaller ganglia, and accompany the various nervous filaments which proceed from them. Into the whole outer surface of the hypogastric ganglion numerous branches from the third sacral nerve enter; and behind there is a great connection formed between the ganglion and the branches of the hemorrhoidal nerves. The vaginal nerves arise from the inferior margin of the ganglion, and the vesical from its anterior border. Some of these nerves pass on the outside of the ureter to enter the middle vesical ganglion, and others pass on the inner surface of the ureter to the anterior part of the neck of the uterus.

From the superior and anterior part of the left hypogastric ganglion, a plexus of nerves, accompanied by an injected tortuous artery, proceeds upward along the whole body of the uterus, close to the trunk of the left spermatic vein, and there terminates in a dense, reddish-brown coloured mass, consisting of fibres firmly interlaced together, and which has all the characters of a true ganglion. From its vicinity to the principal spermatic artery and vein, which it partly surrounds, and the ligament of the ovary, it may be called the left spermatic ganglion. Between this ganglion and the left hypogastric ganglion an artery extends, which is closely embraced by a plexus of nerves, and a direct nervous communication is thus established between these remote ganglia. The nerves adhered so firmly to the artery through its whole course, that, before they were separated, they presented the appearance of two white lines on its sides, with filaments crossing over the vessel. From these nerves extending between the left hypogastric and spermatic ganglion, branches, with arteries, are given off in their whole course to the subperitoneal ganglia and plexuses on the posterior surface of the uterus; and also branches to the plexuses on the anterior surface.

On approaching the spermatic ganglion, these nerves with their artery pass under or between the branches of the *left subperitoneal plexuses*, and frequently communicate with them by fine nervous filaments. The artery can be readily traced through the substance of the spermatic ganglion, but the nerves which accompany it from the hypogastric ganglion immediately disappear on entering the mass. Numerous large branches of nerves from the left subperitoneal plexus likewise terminate in the left spermatic ganglion; but some of them pass under it, and proceed to the round ligament; and others are continued upward, gradually diminishing in size as they approach the renal plexus along the spermatic bloodvessels. From the upper border of this ganglion large flat nerves proceed to ramify on the fundus uteri, and pass with the vessels into the muscular coat. The trunk of the spermatic vein and artery is almost completely surrounded with this ganglion, as the uterine and vaginal arteries and veins are enclosed within rings of nerve connected with the hypogastric ganglion.

In this dissection there are nervous structures displayed on the anterior and posterior surface of the uterus of still greater magnitude. These, from their situation, may be called the subperitoneal ganglia and plexuses of the uterus.

Over the middle of the lower part of the body of the uterus behind, immediately beneath the peritoneum, is situated the posterior subperitoneal ganglion, which is considerably larger than the left hypogastric ganglion. It presents the appearance of a layer of dense structure, composed of fibres strongly interlaced together, having a yellowish-brown colour. It adheres firmly to the peritoneum; but, between its lower surface and the muscular coat of the uterus, there is interposed a thick, soft layer of cellular substance, through which filaments of nerves, and branches of considerable size, pass to the muscular coat of the uterus. The middle part of the ganglion is more than two lines in thickness, but it becomes everywhere thinner towards the circumference, and particularly at the inferior border, where it sends off many nerves to the back part of the vagina. From its left lower and lateral part it sends off two layers of broad nerves, one of which adheres to the peritoneum, and the other closely invests the muscular coat and bloodvessels of the uterus. Between these layers there is placed a very thick mass of soft cellular membrane, through which innumerable branches of nerves pass between these layers; the hypogastric ganglion, and the plexus of nerves, with the injected artery, extending between the hypogastric and spermatic ganglia. Many of the superficial nerves pass down under the peritoneum, and terminate in the upper border of the left hypogastric ganglion; and upon these superficial nerves there is formed another ganglion of considerable size, between which and the hypogastric nerve numerous branches of soft nerves extend. This ganglion, formed on the nerves under the peritoneum near the edge of the uterus, is thick and solid, and consists of a yellowish-brown substance, with white nervous filaments interlaced, and arteries of a considerable size passing through it. From its lower border large nerves extend to the upper edge of the hypogastric ganglion, and innumerable soft nerves enter the whole inner surface of the hypogastric ganglion, which take their origin from the lower part of the great subperitoneal ganglion. The upper part of this ganglion becomes firmly adherent both to the peritoneum and muscular coat of the uterus, which it covers as high as the fundus. Large broad nervous plexuses, superficial and deep, extend from the upper portion of the subperitoneal ganglion across the body of the uterus to the spermatic ganglion and bloodvessels, and the round ligament, around which they form a sheath of nerves.

As the arteries and veins on the right side of the uterus are only partially injected, the nerves extending between the hypogastric and spermatic ganglia have not been so minutely traced. But that there is a similar nervous chain, connecting these great ganglia of the fundus and cervix and the subperitoneal ganglia and plexuses, does not admit of doubt, and has been demonstrated by other dissections upon the table, at an earlier period of pregnancy.

Over the middle of the anterior and lower part of the uterus there is situated a nervous and vascular mass of great extent, and similar in structure to the subperitoneal ganglia described on the posterior surface. It adheres to the peritoneum firmly; but, on being divided longitudinally, it is also observed to be separated from the muscular coat of the uterus by a soft stratum of cellular membrane. From the lower part of this anterior subperitoneal ganglion, nerves are sent down to the cervix uteri and vagina, and numerous branches pass off on both sides to the hypogastric ganglia. Superficial and deep plexuses of nerves are likewise sent off from its superior lateral borders, which proceed across the uterus, sending branches into the muscular coat, and uniting with all the ganglionic plexuses on the posterior surface. The appearances presented by the anterior subperitoneal ganglia and plexuses in the fourth month of pregnancy are seen in this preparation and in this drawing. At this period it seems nothing but a thin, nervous, and vascular membrane, imbedded in soft cellular substance, through which the delicate nervous filaments, accompanied with arteries, proceed to the superior angle of the uterus. On comparing these ganglia and plexuses in the fourth and ninth months of pregnancy, it is impossible to avoid being struck with their enormous development during the latter months of pregnancy, or to resist the conclusion that these great nervous structures are formed for the purpose of supplying the uterus with that nervous power which it requires during labour.

These dissections prove, as was observed in the first lecture, that the human uterus possesses a great system of nerves, which enlarges with the coats, bloodvessels, and absorbents, during pregnancy, and which returns after parturition to its original condition before conception takes place. It is chiefly by the influence of these nerves that the uterus performs the varied functions of menstruation, conception, and parturition; and it is solely by their means that the whole fabric of the nervous system sympathises with the different morbid affections of the uterus. If these nerves of the uterus could not be demonstrated, its physiology and pathology would be completely inexplicable.

LECTURE XII.

ON THE LIQUOR AMNII, FŒTAL MEMBRANES, AND UMBILICAL CORD, IN THE LATTER MONTHS OF PREGNANCY.

After the fifth month the walls of the decidual cavity have usually coalesced, and the villi and cells of the chorion which were covered by the decidua reflexa have disappeared, and the placenta and membranes form a large sac, which adheres to the whole inner surface of the uterus, and contains the fœtus, umbilical cord, and liquor amnii. The *liquor amnii* is usually of a straw or orange colour, and has a faint but not very disagreeable odour. It is unctuous, and a little more dense than pure water. Sometimes it is flocculent, having gray, yellow, green, or black shreds floating in it, or it appears to be mixed with blood, and has a fœtid smell. Vauquelin and Buniva found it to consist of 98·8 water, 1·2 albumen, and salts of soda and lime. Geoffroy St.-Hilaire says it contains atmospheric air; but Lassaigne and Chevreuil believe that this gaseous fluid is a mixture of carbonic acid and azote. Tromherz and Gaugert found in it benzoic acid and urea. Dr. Davy has also detected urea in the liquor amnii; and there can be no doubt that this and the other constituents of the urine are secreted by the kidneys of the fœtus long anterior to birth, and that in a perfect state of the organs the urine is continually escaping through the bladder, and mixing with the amniotic fluid. Dr. Rees has more lately analysed the liquor amnii, and has found it to contain in 1000 parts, of water, 983·4; albumen, 5·9; albuminate of soda and chloride of sodium, 6·1; animal extractive, soluble in water and alcohol, urea, and chloride of sodium, 4·6; with traces of alkaline sulphate. Urea has not, however, been invariably detected in the liquor amnii. I induced premature labour for distorted pelvis, in a patient six months pregnant, by drawing off the liquor amnii, which amounted to thirty-two ounces. It was of a light straw colour; its specific gravity was 10 10: it was neither acid nor alkaline. Dr. Prout and Dr. Bostock analysed portions of it, but they could not discover any trace of urea or uric acid in its composition. Cases have been related in which saffron and sulphuric acid have been detected in the liquor amnii, after they had been taken by pregnant women. Haller and Leuret state that in women who have used mercurial friction during pregnancy the liquor amnii has possessed the property of rendering copper white. From this, and other facts, I believe that the processes of secretion and absorption are constantly going on upon the inner surface of the amnion; though no blood-vessels nor absorbents have yet been demonstrated in this membrane. The quantity of liquor amnii varies in different women, and in the same persons in different pregnancies. Very often it does not amount to a pint at the full period of gestation. In one case sixteen pints escaped on puncturing the membranes. In a woman with great distortion from mollities ossium I drew off the whole of the liquor amnii at the end of the seventh month, and it did not exceed a pint. The liquor amnii distends the uterus during pregnancy, preserves the fœtus and umbilical cord from external violence, and assists in the dilatation of the os uteri during labour. It was the opinion of Hippocrates that the fœtus swallowed the liquor amnii; and this view of the nutrition of the fœtus was adopted by Harvey. "Quinetiam certum est," he observes, "intra pulli ingluviem (talisque prorsus in omnium embryonum ventriculus cernitur) substantiam quandam, colore, sapore, et constantia dicto jam liquori persimilem reperiri; eandemque, in ventriculo aliquantulum coctam, lac coagulatum referre; quam etiam, chyli specie, in primis intestinis deprehendimus, inferiora antem intestina excrementis stercoraceis referta sunt. Similiter in viviparorum in fœtibus intestina crassiora consimili excremento replentur, quali eadem, cum lacte vescuntur, abundare cernimus. In ovibus etiam, aliisque bisulcis, manifesta sunt scybala. Quid dubitemus igitur affirmare fœtum in utero sugere; et in eo fieri chylificationem, cum ejus manifesta adsint tum principia, tum reject amenta?" The fallacy of this opinion of Harvey, and of later physiologists, with regard to the sources of the nutritious matter found in the intestinal canal of the fœtus, is demonstrated by the facts, that the liquor amnii does not contain nutritious matter, and that acephalous children, and those born with the œsophagus impervious, have not only been perfectly nourished, but in their intestines substances have been found similar in character to those contained in the intestines of children in whom no such malformation had existed.

The fœtal membranes, in the latter as in the early months of pregnancy, are three — viz., the amnion, chorion, and decidua. The amnion and chorion, after covering the umbilical cord and inner surface of the placenta, unite at its circumference with the decidua, which invests the uterine side, and extend from thence over the whole inner surface of the uterus. Though divisible into three layers, they may be considered, in a physiological point of view, as constituting only one membrane. When separated from the chorion, with which it is every where in contact, the amnion is a strong, transparent membrane, smooth on the inner surface, and covered on the outer by a layer of gelatinous matter of no great thickness. The chorion, which was dense and opaque, and covered with villi in the early months, is now a very delicate, translucent membrane, which firmly adheres to the whole inner surface of the decidua. Near the margin of the placenta some scattered villi are occasionally seen ramifying under the decidua. In the human chorion I am not aware that any bloodvessels have been seen in the early months, but I have distinctly observed decidual veins filled with injection ramifying upon the chorion in the eighth month. Mr.

Dunn showed me a portion of chorion in March, 1841, in which veins were seen filled with yellow injection, which had flowed from the uterine veins, through those of the decidua, into the veins of the chorion. "That portion of the chorion," says Dr. Hunter, "which invests the fœtal surface of the placenta, is thick, strong, and is so intimately connected with the superficial branches of the umbilical vessels, that it seems to give them a coat; or they seem to run in a duplicature of its substance till they emerge in smaller branches to disperse themselves through the different lobes of the placenta." The smallest branches, even the capillaries, as well as the largest umbilical vessels of the placenta, have this coat from the chorion, as I stated before when describing the structure of the placenta in the early months of pregnancy.

The decidua, in the latter months, is a soft vascular membrane, of a yellowish colour, which invests the whole ovum. Numerous small tortuous arteries and veins pass from the inner surface of the uterus to the decidua, and ramify in it; or rather the arteries of the uterus terminate in the decidual arteries, and the decidual veins open into the veins of the uterus. The oblique venous canals which existed in the early months are not visible, and the general character of the membrane is greatly changed. At the neck of the uterus it is usually thin, and around the placenta it is thicker and more vascular than in any other part. Dr. Hunter says, that at the very edge of the placenta it splits into two strata, and is continued over both surfaces of the placenta, but especially its inner smooth surface, blending itself there inseparably with the umbilical portion of the placenta. Dr. Baillie has given the same opinion respecting the division of the decidua into two membranes at the margin of the placenta, and states that "the layer of the decidua which lies between the chorion and the placenta is, in one case, much thicker than in another. It sometimes forms a smooth, tender, opaque membrane: but is more frequently reticulated, especially towards the edge of the placenta, looking somewhat like lace. Occasionally there are portions of it a good deal thicker than the rest, and which, shining through the transparent chorion, bear some resemblance to pieces of fat. This layer is generally thicker than that which adheres to the rough external lobulated surface of the placenta. It communicates with that other by means of the processes of the decidua, which pass between the lobules of the placenta and along the external surface of the umbilical vessels. These processes may be evidently seen to join it, and it is probable that they contribute principally to its formation.

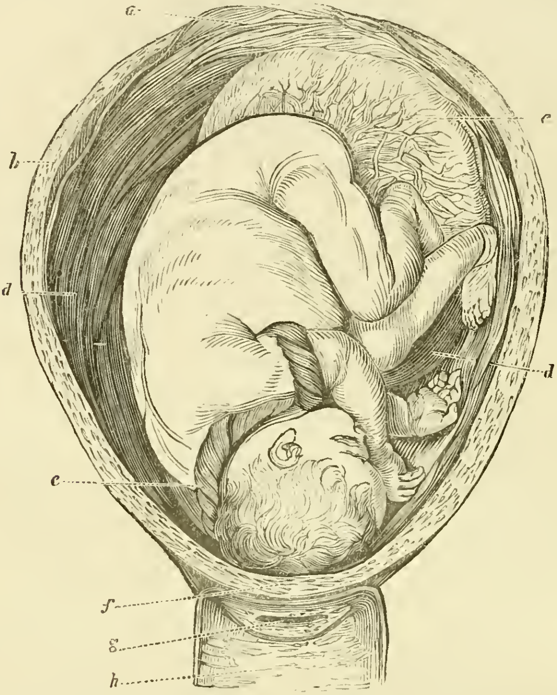
Mr. Hunter says the placenta is certainly a fœtal part, and is formed on the inside of spongy chorion or decidua, and that the decidua can be distinctly traced between the placenta and uterus, hardly ever passing between the lobuli of the placenta and the vessels of the fœtus, never entering into it, and that of course none of the fœtal vessels ever come into absolute contact with the uterus. In some placentæ, I have distinctly seen a thin, yellowish, cribriform membrane, lying under the chorion, which appeared to be continuous with the decidua at the margin of the placenta, as described by Dr. Hunter and Dr. Baillie, and I now believe that it exists in all placentæ at the full period, though often recognised with great difficulty, and never seen in the early months.

The vascular system of the fœtus extends by the umbilical cord to the placenta, in which the processes of respiration and nutrition are performed. It consists of the two umbilical arteries, which convey the blood from the fœtus to the placenta, and of the umbilical vein which brings back the blood from the placenta to the fœtus. These vessels, with the obliterated duct of the vesicula umbilicalis, pass through a peculiar cellular structure, which contains a very ropy, gelatinous fluid, called the gelatin of Wharton. These cells of the cord freely communicate with one another, so that the viscid fluid wholly escapes from a cord that has been cut and suspended by one of the divided extremities. All these cells can be filled with air and mercury. In *this* preparation, after the fluid from the cells had escaped, they were filled with air, and also the arteries and the veins, and the cord was quickly dried in the sun. The whole is so transparent that the course of the arteries turning round the vein is beautifully seen. In some places the arteries run a little way without turning round the vein, or form solitary loops or folds in others: in *this* injected funis the arteries are likewise seen turning round the vein, firmly twisted in one part, and in other parts leaving the vein for a short distance, and running nearly parallel with it. This spiral course of the umbilical arteries round the vein, and twisting of the whole cord, always commences and exists in the highest degree at the umbilicus of the embryo. It must, therefore, arise, as Mr. Streeter has suggested, from the action of the heart upon the arteries of the cord, and not from the simple rotatory movements of the embryo and fœtus. But it is difficult, or, rather, impossible, yet to explain why the turning should generally take place from left to right, which is not accidental. "Whatever be the cause," says Dr. Hunter, "in most which I have attended to, the twisting of the navel-string has been in the same direction, namely, such as would be produced in turning the child round upon the navel as a centre, by pushing its head towards the right side, and its feet to the left. In two-and-thirty preparations now before me, four only are twisted the contrary way; and of the twenty-eight which are twisted in the common way, three have the contrary twist, for some inches, at the extremity which was towards the fœtus." The twisting commences at a time when the embryo is wholly suspended by the funis; it is difficult, therefore, to believe that it takes place solely for the purpose of preventing the vessels from being affected by any stretching power. Nor can this turning of the arteries round the vein, and torsion of the cord from left to right, commencing at the umbilicus, take place for the purpose of retarding the fœtal circulation, as some physiologists have supposed. The rapid action of the fœtal heart, the force of both ventricles being applied to propel the stream of blood through the umbilical arteries, prove that nature intended that the fœtal blood should circulate swiftly through the vessels of the placenta. Had it been otherwise, the pulsations of the fœtal heart would probably have corresponded with those of the parent.

In this large injected umbilical cord, you see the amnion and chorion distinctly reflected from the fœtal surface of the placenta, and forming its sheath, which extends to the umbilicus. The appearances are here also seen which led Professor Fohman to believe that he had discovered absorbents in the cord. He says, if you make an opening in the sheath of the cord, and put in a fine tube filled with mercury, you will inject all the absorbents. It is here quite evident that there is nothing but the cellular membrane under the sheath of the cord injected with the mercury, and the appearances are precisely similar to those represented in M. Fohman's Plate. Neither absorbents nor nerves have yet been demonstrated either in the umbilical cord or placenta, although I think it extremely probable they exist in both. In some cases the umbilical cord is thicker than the thumb, is of a livid colour, and loaded with serum. At other times we meet with embryos expelled in abortion, at the end of the second or third month, with umbilical cords a foot in length, not thicker than a pack-thread, and twisted as firmly as the threads of a rope. *This* is a very good specimen of a long, slender, and firmly twisted funis, attached to an embryo of ten weeks. It is difficult to imagine that the heart of this embryo could possess a power sufficient to turn the funis round in this firm manner.

The average length of the cord is about eighteen or twenty inches; but it is often two feet in length, and it has in a few cases measured upwards of fifty inches, and has been twisted several times round the neck or trunk of the fœtus. In some instances it has been so short, that the child could not escape from the vagina till it was divided. The twisting of the cord round the neck of the fœtus is a very common occurrence. In 1920 cases, Dr. Churchill says it was observed 204 times. There can be no doubt that it is a very common cause of protracted labour. The twisting of the cord around the neck is owing to a different cause from the twisting of the vessels of the funis from left to right. I believe in a great majority of cases it is produced by one of the arms receding from the thorax. I have observed this in so many cases that I have little doubt of the fact, and you have a striking illustration of it in this plate accompanying M. Siebold's Obstetrical Commentary, entitled De Circumvolutione Funiculi Umbilicalis; Göttingen, 1834. Both arms here have left the thorax; the left hand is closely applied to the left cheek, and the right hand to the right side of the pelvis. The cord on leaving the umbilicus passes up between the left arm and forearm, then round the neck, over the right shoulder, under the right axilla, along the abdomen to the inside of the right thigh, and then twists twice tightly round the right leg, close to the insertion of the cord into the placenta. In another embryo delineated by Siebold, both arms have likewise left the thorax, and the twisting of the cord round the neck is evidently the effect of this. In this very recent embryo of three months, sent to me by Mr. Marshall, of Greek Street, the same thing is seen still better; here the cord is about nine inches in length, and firmly twisted like a worsted thread. The left arm has quitted the chest, and the hand is applied to the left side of the face. The funis passes up over the right arm, which rests on the thorax, turns round the neck, then over the back part of the left shoulder, which it has marked deeply, and runs under the left axilla, across the chest up to the neck, the half of which it again surrounds. This specimen, and indeed all the others of this kind, certainly render the opinion of Mr. Streeter highly probable, that in many cases of preternatural presentation may arise from twisting of the umbilical cord round the neck, trunk, or extremities of the fœtus.

Fig. 33.[*]



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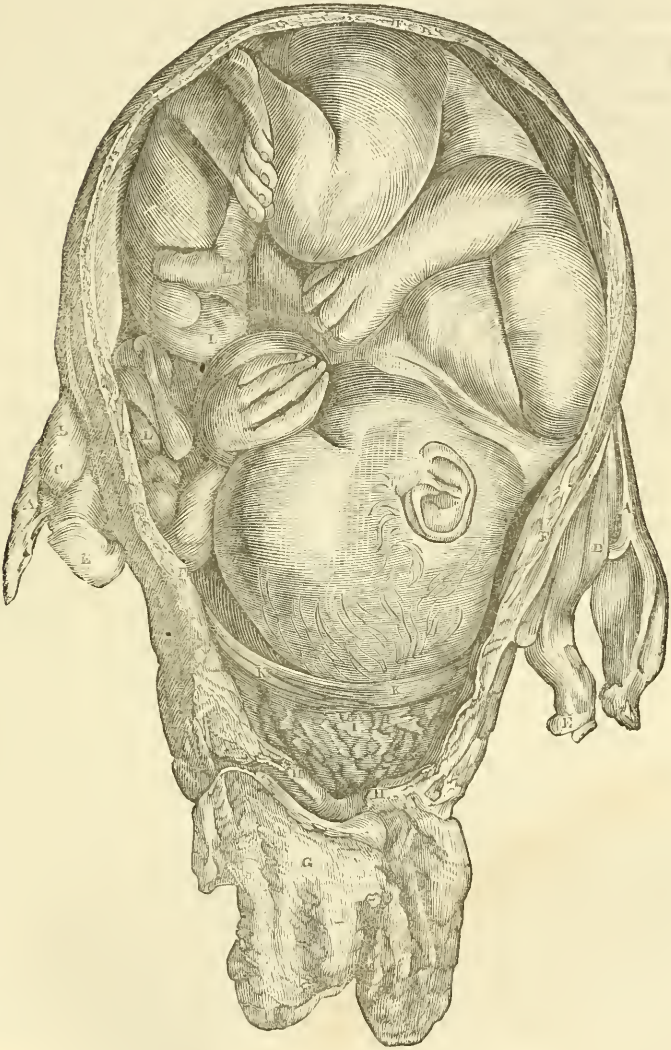
[*] *a*, the membranes of the ovum turned over the surface of the fundus uteri; *b*, the parietes of the uterus divided: the dark spots are intended to represent the cut arteries and veins; *c*, the placenta, attached to the back part of the body, towards the left side; *d*, the cavity of the ovum laid open; *e*, the funis umbilicalis twisted round the neck and arm; *f*, the cervix uteri perfectly developed; *g*, os uteri, displaying its glands, as enlarged during pregnancy; *h*, the vagina.

An Engraving from Dr. Hunter's Twelfth Plate, representing the Placenta adhering to the Cervix Uteri.

Fig. 34.*



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* A A, the fallopian tubes; B, the left ovarium, at the lower end of which is seen, C, the projecting corpus luteum; D, the right ovarium; E, the group of spermatic vessels approaching the sides of the womb; F F F, the section of the substance of the womb; G, the inside of the vagina, which is laid open by a longitudinal incision and spread out; H H, the mouth of the womb; I, the external lobulated surface of the lower part of the

True knots are sometimes made by the fœtus upon its own umbilical cord, and it thereby unconsciously, if I may so express it, commits suicide by compressing the vessel. I have seen two instances of this, and in both the knots must have been tied long before the labours commenced. In one the knot was ten inches from the umbilicus, and the cord also surrounded the neck of the child once. As you can see in the preparation now before you, the vessels of which have been injected, the cord had been much compressed where the knot was tied. The child weighed five pounds two ounces. In the other the cord is atrophied between the knot and the umbilicus. I have no doubt these were both formed early in pregnancy. Where the knot is not tight, as I saw in a case a few weeks ago, the nutrition of the child is not affected by it in the slightest degree. Baudelocque gives a figure of a double knot on the cord. These appear to consist of two knots formed at different times. The fœtus must have passed twice through a large loop of the cord.

The placenta, into which the umbilical cord is inserted, has usually a circular or oblong shape, and is much thicker in the middle than at the circumference. It varies, however, greatly in its form and dimensions in different cases. Sometimes it is nearly divided into two, like the placenta of twins, or has a small lobe, distinct from the mass, as Dr. Hunter states, into which the cord passes, or the cord terminates in the membranes before reaching the placenta. The placenta may adhere to any part of the inner surface of the uterus, but it is most frequently attached to the posterior wall near the fundus. In the figure at page 122, the placenta is represented adhering to the upper and back part of the uterus.

LECTURE XIII.

ON THE STRUCTURE OF THE PLACENTA.

I HAVE placed upon the table before you a healthy human placenta, which was expelled from the uterus a few hours since in natural labour, with the membranes and umbilical cord. When the child had breathed I applied a ligature firmly around the cord two inches from the navel, and the pulsation of the umbilical arteries, which corresponded with those of the heart of the child, instantly ceased. Another ligature was then tied around it a little nearer the placenta in the usual manner, and the cord was divided

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placenta, which had originally stuck to the inside of the neck and mouth of the womb, but as parturition approached, the dilatation of these parts occasioned a separation, which was necessarily followed by a hemorrhage; K K, the membranes cut through where they were coming out from the border of the placenta, and enclosing the most depending part of the child's head. The vacant space which is seen between the inside of the neck of the womb and the secundines was full of clotted blood in the dead body.

between the ligatures. If the cord had been divided between the placenta and the first ligature, without a second having been applied, only a small quantity of blood — not enough to fill a cup — would have flowed from the open umbilical vessels. This fact proves that there is no direct communication between the arteries and veins of the uterus, and the umbilical arteries and vein; the placenta was still adhering to the uterus. Had these vessels anastomosed in the placenta, the blood of the mother would have escaped when the cord was cut before the detachment of the placenta and the application of a ligature. The second ligature which you see still around the placental end of this cord was not required to prevent the maternal blood flowing out of the umbilical vessels, for a single drop would not have escaped had it been left untied. This simple experiment may be repeated any number of times without risk to the mother, and invariably with the same result, which is not the case when the bloodvessels of the uterus and of the umbilical cord are injected. But injections have likewise proved that the bloodvessels of the mother do not communicate or anastomose in the placenta with the fœtal bloodvessels. In the second volume of the Medical Essays and Observations, published by a society at Edinburgh in 1732 or 1733, Dr. Monro says, p. 129 — "Having fixed a pipe into one of the iliac arteries of a woman three or four months gone with child, and having tied the other iliac artery and the veins, I pushed through the pipe fine oil of turpentine, which is a liquor which easily goes from the extreme arteries of any part of the body into the corresponding veins. I continued this injection till all the vessels of the womb, both arteries and veins, were in hazard of bursting, and till all the gentlemen present agreed that a sufficient quantity and force were employed, Not one drop of this oil was found in any branch of the umbilical vessels or in the fœtus, though it was searched for most carefully." From this experiment, and from other remarks in this essay on the Nutrition of Fœtuses, I think it must be admitted that Dr. Monro possessed a knowledge of the fœtal circulation in the placenta, and was fully aware that the greater part, if not the whole blood sent out by the umbilical arteries, is poured into the umbilical veins by anastomosing canals. "For liquors," he observes, "thrown into the umbilical arteries towards the placenta require less force to make them return by the umbilical vein, and, when injected with the same force, they return more quickly than they do into the vein corresponding to any other artery of a child when the artery is injected."

In the umbilical cord attached to this very recent placenta, the two arteries and the vein, especially the latter, are seen through the transparent sheath distended with fœtal blood. The cord enters the placenta near its centre, and the branches of the umbilical arteries and vein are seen through the amnion and the chorion spreading out like the roots of a tree, and sinking into the placenta. There is nothing to be seen on the fœtal surface of the placenta, except the umbilical vessels covered by the amnion and chorion reflected from the cord, extending outward to the circumference, and disappearing in the mass at different instances from the centre. If size coloured with vermilion were injected into one of these umbilical arteries, after they were emptied of their blood, it would fill all the branches of the two arteries in the placenta, and would probably flow into the extreme branches and trunk of the umbilical vein. Or if the injection did not pass from the arteries, which is sometimes the case, all the ramifications of the umbilical vein could readily be filled with size, coloured yellow from the trunk of the vein. In this preparation of the placenta which is now exhibited to you all the ramifications of the fœtal vessels have been minutely injected; the arteries with red, and the veins with yellow; and the whole organ appears to consist of nothing but these red arteries and yellow veins covered on the uterine surface by the outer layer of the decidua, and on the fœtal side by the amnion, chorion, and the inner layer of the decidua. (See Fig. 35.) The whole mass of the placenta consists of the ramifications of the vessels of the umbilical cord, covered on the uterine side by the placental decidua, and on the inner surface by the other membranes; the branches of the umbilical vessels being covered on both sides by membranes. But there are large vacant spaces or cavities in the interstices of the vessels, which all freely communicate with one another, which have been called the cells, or the cellular or spongy structure of the placenta, and have been compared, both by William and John Hunter, to the cavernous substance of the penis. As these great vacuities do not resemble cells in any other part of the body, and as some of the most recent and accurate anatomists deny that there are cells in the placenta, to avoid all ambiguity I shall call these spaces between the vessels, the cavernous structure of the placenta. Professor Owen and Mr. W. Jones both think that this is the best term which I could employ to designate these cavities.

When describing the veins of the gravid uterus I was not aware that the similarity which exists between them and the corpora cavernosa penis had been pointed out by any anatomist; but the following remark proves that Dr. Monro primus was fully acquainted with the peculiarities of the uterine sinuses: — "The sinuses are much of the same texture with the cells of the spleen, or rather of the corpora cavernosa penis, being membranous cavities communicating with each other, and having numerous arteries spread on them, whose lateral branches open into the cells, from which veins go out to be joined to other veins that return the blood from the other parts of the womb."

The placental decidua, as Dr. Hunter states, receives no vessels demonstrable by the finest injections from those of the navel-string. When a placenta is finely injected, he observes, and then steeped and frequently washed in clean water, it is evident that the umbilical injected vessels do not reach even the outer surface of the placenta, but are only seen through a membrane (decidua) which covers all that surface. It is rough or ragged, like the inner surface of the uterus, to which it adheres, and, by its whiteness, becomes very distinct from the vascular injected part of the placenta, over which it is spread. It becomes still more distinguishable when the part is put into spirits, which render it more opaque and whiter. In this preparation, which will be handed round, the umbilical vessels were very successfully injected, while the placenta adhered to the uterus. A section has been made of the placenta and uterus, from the fundus to the cervix, and they have been separated partially from one another. The placenta is seen to be nothing but a mass of fœtal vessels covered on the inner surface by the amnion and chorion, and on the outer surface by the decidua, which is white and opaque, and totally destitute of injected vessels.

Fig. 35.*

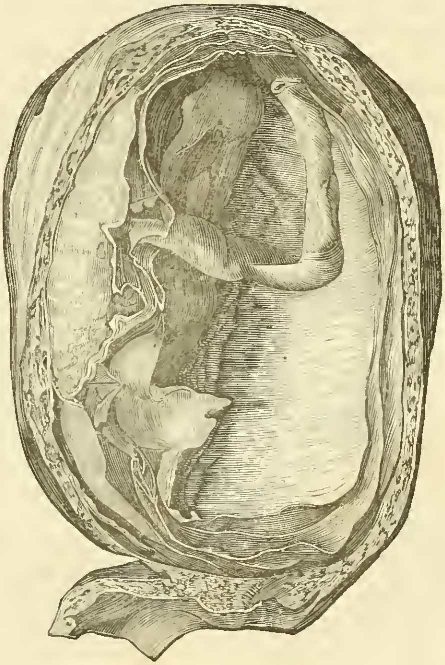
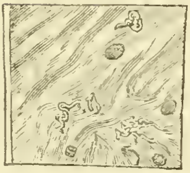


Fig. 36.†



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* Fig. 35 represents a section of the gravid uterus, placenta, and membranes. The uterine sinuses are filled with injection; the membrana decidua is seen passing between the uterus and placenta, the chorion and amnion passing over its fœtal surface, and the fœtal vessels of which the placenta is composed situated between the placental decidua and chorion.

† Fig. 36 represents the venous orifices in the lining membrane of the uterus where the placenta had adhered, and the decidual arteries.

Not a particle of injection has passed into the vessels of the uterus across this membrane. But I shall show you another preparation of the same kind, in which the result was entirely different, and appearances were seen which might have induced me erroneously to believe that a direct communication did exist between the fœtal and uterine vessels in the placenta. While the placenta adhered to the uterus I introduced a pipe into the umbilical vein, and injected it without using much force. The injection not merely filled all the ramifications of the fœtal vessels, but all the interstices of these vessels in the placenta, and all the veins of the uterus. I shall hand round another preparation in which precisely the same effect was produced, though very little force was employed in passing the injection into the umbilical vein. The same thing occurred to Dr. Hunter once, and he was not misled by the appearances. From what is now known of the structure of the fœtal vessels in the placenta, it is impossible to believe that the injection in these preparations flowed through natural channels from the umbilical vessels into the uterine veins. The injection must have forced its way into the cavernous structure of the placenta (though I confess my inability to demonstrate this in these preparations), through the coats of the fœtal vessels, and afterwards escaped through the venous openings in the decidua into the veins of the uterus. Almost all physiologists now coincide in the opinion of Dr. Hunter with respect to the termination of the umbilical arteries in the veins, and believe that the fœtal blood is confined to the umbilical vascular system. "Much has been said or supposed," he observes, "about a communication between these vessels and those of the uterus; but from all the experiments I have made upon the human subject (and upon quadrupeds likewise) it plainly appears that the umbilical arteries terminate in the umbilical vein, and not in the vessels of the uterus: and that the blood passes from the arteries into the veins, as in other parts, and so back to the child again. If the placenta be whole in all its substance, which is seldom the case, and its bloodvessels be pretty well emptied of their blood, any subtile injection thrown into an artery will fill the arterial system through the whole substance of the part to an amazing degree of minuteness, and return so freely by the veins as to fill them very generally and equally. In the same manner the whole umbilical system may be filled by injecting the vein, the fluid returning from the vein into the arteries. In both these experiments the injected fluid is confined to the umbilical vascular system, none escaping at the external surface of the placenta, neither by large nor small orifices, whether of veins or arteries."

Professor Weber and Mr. Dalrymple have both carefully investigated, with the microscope, the capillary vessels of the placenta. Dr. Willis, in his translation of Wagner's Physiology, has given an account of Weber's researches with these figures I now show you, the accuracy of which had been denied by Dr. Reid, of St.

Andrew's, but has been completely confirmed by Mr. Dalrymple, in the last volume of the Medico-Chirurgical Transactions. "The whole mass of the placenta," observes Mr. Dalyrmple, "is made up of the innumerable ramifications of the arteries terminating in beautiful coiled and convoluted capillaries, which form tufts or bouquets at various intervals: these finally become continuous with the minute origins of the umbilical vein, which return to the fœtus in the same direction that the arteries left it, viz., coiled and twisted in the umbilical cord. The vein and its branches are greatly larger than the arteries and their subdivisions, but less numerous. All the vessels, besides their own proper coats, are inclosed in a fold of chorion. As the minute branches of the arteries terminate in serpentine and very intricately coiled capillaries, so are these latter divided into masses, or tufted and bouquet-like processes, clothed by the prolongations of the before-mentioned membrane. This membrane (chorion) constitutes (by division into processes) true villi, and each villus contains a tortuous capillary, which, entering by the arterial side, leaves it by the venous: as the vessel leaves the villus there is a slight but manifest increase in size. A single tuft or collection of villi, well injected, and laid flat under an inch or half-inch object glass, appears at first sight an inextricable confusion of curiously contorted capillary vessels; but separated by needles, and a single villus detached or expanded beneath a higher magnifying power, this seeming confusion is reduced to order, and the true anatomy of these vessels explained. The membrane inclosing the vessels and capillaries is studded on the exterior by nucleated cells, resembling an irregular epithelium. The inclosed tufts or capillaries, though covered by a common membrane, are nowhere so closely bound together as to constitute one undivided, though really double vessel, as described by Dr. Reid (Edinburgh Medical and Surgical Journal, 1841); and the "blunt extremities" adverted to by that gentleman, appear to me to be the villi of the placenta. The villi are not connected together by cellular tissue, but the mass of the placenta is made up by the vascular divisions and subdivisions, and by the tufts or bouquets of capillaries. The interstices are everywhere free, and communicate with each other. There are no distinct or defined cells constituting a maternal portion of the placenta. The uterine surface of the organ is covered by the decidua, which does not appear to enter further than between the lobules, and the depth to which it thus penetrates varies with the extent of the fissures. Stretching from the fœtal to the interior surface of the placenta, are irregular semi-fibrous bands, more firm towards the fœtal surface, and nearly disappearing towards the decidual. These appear to give firmness to the spongy mass, and, to a certain extent, support the tufts of villi. The bouquets of capillaries are found in all parts of the placenta, but are more numerous at the uterine surface, where they will be found close beneath the decidua. Upon the decidual surface may be observed, thickly scattered, certain papillæ, somewhat obtuse and blunted, about a line and a half in length, which seem to be constituted by innumerable coiled and minute capillaries. On comparing these observations and the accompanying drawings, we cannot help being struck with the very strong resemblance they bear to the plates in Wagner's Physiology, as copied from Weber. Dr. Reid denies the correctness of Weber's drawings, as represented in the "Icones Physiologicæ of Wagner."*

Let us now turn this recent placenta over, and bring the convex uterine surface into view, and endeavour to comprehend the nature of the connection which exists between the placenta and the uterus, and the manner in which the maternal blood circulates in the placenta.

You observe the different appearance which this side of the placenta presents from the other. If the coagulated blood which partially covers and adheres to it be wiped off, you will perceive that it has an irregular lobulated appearance, and that it is completely invested with the outer layer of the decidua. Arantius was, I believe, the first who noticed this fact, and thus describes the placental decidua, in his work entitled "Libellulus de Formatu Fœtu," 1664. "Hanc multiplicem vasorum texturam," he says, "chorion quidam appellevere non nulli vero totam membranam, quam quidem chorii nomine non ineptè appellabimus, quamvis per totam ejus circumferentiam, ut in brutis, vasa minime dispersa habeat, illias tamen suprema pars, quæ carni connectitur maximis est prædita distributionibus. Hæc autem membrana pars, quæ vasorum robori per jecur uterinum distributorum, est destinata eidem carni altera ex parte propria quasi membrana atque indumentum evadit, ut inter hanc et uterum media sit reposita."

If you keep this surface of the placenta convex, you can see numerous small tortuous arteries in the decidua filled with maternal blood. Their open mouths are visible at the surface of the membrane, and they soon disappear, after making, as John Hunter describes, "a twist or spiral turn upon themselves." These decidual arteries soon terminate in the cavernous structure of the placenta, but they do not anastomose with the fœtal vessels. Through these small tortuous canals in the decidua, the maternal blood flows from the arteries of the uterus into the cavernous structure of the placenta. It is easy to inject these decidual arteries from the uterine arteries, and to demonstrate their continuity, though their structure is different; the uterine arterial tissue not being continued into the decidual arteries.

At an early period many anatomists asserted that there were numerous small vessels which passed between the placenta and uterus during pregnancy. In 1759, Rœderer, from whose work the second figure of the preceding engraving is taken, accurately delineated these decidual arteries. He calls them "Anguillulæ arteriosæ," and says that he saw these arteries in the chorion covering the placenta, or the placental decidua. "In ipsam membranam ovi filamentosam rete ita continuatur, ut ipsa vascula retis uterini pergant non interrupta in simile membranæ filamentosæ, rete, stipatumque sit rete filamentosæ ubi plenum est rete uteri, rarum rete filamentosæ, ubi rarum rete uteri."

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* Dr. Reid now admits that Weber's representations are correct.

He adds, "Nulla autem arte efficere potui, ut ex superficie placentæ uterina flatus in ipsa vasa umbilicalia placentæ promoveatur: sed in sola membrana filamentosa, tum qua ad velamenta pertinet, tum qua ad superficiem placentæ uterinam, istud vasorum rete subsistit, sine ullo saltem apparente, cum vasis umbilicalibus commercio."

Rœderer appears clearly, from the following sentence, to have observed that the injections which he threw into the uterine arteries passed through the decidual arteries into the cavernous structure of the placenta; but he supposed that it did so by lacerating their coats. "Velut venarum materies passim, ruptis parietibus, sibi in spongiosam placentæ substantiam vicem peravit, ita rubrum etiam materiem, arteriis effusum, in illa spongiosa substantia passim vidi. Facile autem disrumpi arteriolas liquet, tunica videlicet tenui et molli, præcipue versus internam uteri substantiam factas."

In 1754, five years before the publication of Rœderer's work, the decidual arteries were seen and injected by John Hunter, and their connection with the uterine arteries, and their termination in the cavernous structure, demonstrated. This discovery of the origin and termination of the decidual arteries enabled him to establish the important physiological doctrine of the maternal circulation in the organ. No account, however, was given of these vessels, and of the maternal circulation of the placenta, till the publication of Dr. Hunter's Engravings of the Gravid Uterus, in 1774. Mr. Hunter's paper on the Structure of the Placenta, in which there is a most interesting account of the manner in which the maternal circulation in the placenta was discovered by him, in 1754, was not presented to the Royal Society till 1780.

To Noortwyk the honour is due of having previously discovered the communication between the cavernous structure of the placenta and the veins of the uterus. In 1743, he published a work, entitled "Uteri Humani Gravidi Anatome et Historia," in which he has not only described, but accurately represented in two engravings, the venous apertures in the lining membrane of the uterus, and the corresponding venous apertures in the placental decidua, as seen in the dissection of a gravid uterus in the latter months. In the first engraving you perceive the openings in the lining membrane of the uterus similar to those which are seen in Figure 2. In the second engraving the oval-shaped openings in the decidua are figured. The bloodvessels of the uterus were injected from one of the iliac arteries, and the appearances observed on opening the uterus are thus described at page 9:—

"§ 6. Mirabar, cum structura partium reclinationem illam

negaret: causam indagando, vidi 1°, chorion per veram cellulosam substantiam uteri cavo adcretum esse, quam separando deprehendi molissimam, cujus ope universa ovi superficies utero cohærebat quam posset proxime, ita ut, elevata matricis substantia, nulla divisionis nota pateret sensui: sed dorso cultri leniter depresso ovo, vel eodem inter hoc et uterum reciprocato, facillime solvebatur istud vinculum.

"2°. Eandem hanc cellulosam separanti vasa occurrebant numerosa per totum ambitum, ex chorio in uterum porrecta, impleta. Accuratius examen docuit, internam matricis superficiem poros habere mediocris magnitudinis, multos, aliquantulum tamen ab invicem distantes (vasorum orificia); quibus proportionatæ dimensionis canales extra chorion emergentes, per dictam cellulosam progressi, inosculabantur, sic ut vas responderet vasi, et communis materiæ cylindrulus utrumque impleret. Vasa hæc alia majora, alia minora erant, in universum talia, ut tenuiorem, crassioremve aciculam, quædam etiam caput aciculæ maximæ (*de knop van een grooten baakerspelt*) facile admisissent. Rursus nonnulla recto tramite uterum subibant, nonnulla postquam brevi prius spati: juxta uteri superficiem reflexa processerant erantque ultima hæc non rotunda, sed compressa quasi et complanata. Omnium etiam memoratorum vasorum cum matrice unio levissima vi solvebatur. Membranularum vero summa tenuitas venas esse arguebat.

"3°. Majores quidam trunculi intra chorii substantiam notabiliter dilatabantur, sinuum specie duplo ut minus capaciores, talesque per longitudinem transversi pollicis ibidem decurrebant, inde ramosi chorio profundius immergebantur.

"4°. Tandem et hoc meminerim, quod inter separandum uno loco exiguum quid liquoris crassiusculi albicantis supra chorion effusum fuerit (cremorem lactis non inepte referebat): et quod.

"5°. Ovum totam exacte impleret matricem, in ipsam quoque ejusdem angustiam exporrectum, quam protracta eò ovi convergentis (si ita vocare liceat) appendix, similiter (ut supra) nexa, tenebat.

"§ 7. Sic passim ovum utero hæsisse vidi; attamen circa placentam nexus iste quodammodo differebat; quantumvis enim et hæc pari ratione, mediante cellulosa, vasisque, adligaretur utero, cellulosa eo loco nonnihil validior erat, adhæsio itidem aliquantum tenacior, nihilominus vix multum majore molimine solubilis. Vasa insuper numerosiora videbantur, quibus extra placentam emergentibus, atque in uterinos poros insertis, manifesta oculis communicatio patebat inter uteri et placentæ vasa: et hæc iterum variam diametrum monstrabant, in genere non multum ampliora, quam quæ circa chorion descripsi, pariterque tenerrima.

"2°. Sed ad radicem placentæ, ubi hæc per orbem supra chorion terminatur, cellulosa illa in ligamentosas lacinias collecta nexum denuo parum firmiorem exhibebat. Hic vasa conspiciebantur copiosissima, capacissima, adeo insignia, ut eorum quædam digitum pueri potuissent recipere; veri venosi sinus, mollissimus tenuissi-

misque tunicis conflati, breves ; ex quibus mox ramii ntra placentam immergebantur, longe minores, magna parte admodum exiles: quod patuit, dum in sinus tales, excussa, quam continebant, materie, introspicerem postea. Rami hi ex fundo sinuum, quà placentæ innascebantur, procedebant, ea utcumque ratione, uti Vena cava, innata hepati, intra hujus substantiam ramos demittit. Fundus sinuum, solidiori membrana præditus, albicabat: ortos inde ramos materia injecta subierat ; quin imo (quod postmodum aperto ovo, et amnio separato, vidi) in ipsam placentæ basim, qua chorio insidet, locis quibusdam manifesta, penetraverat."

But, besides the arteries of the decidua, there are veins, as Noortwyk has described, by which the maternal blood is conveyed from the cavernous structure of the placenta into the veins of the uterus, and by which the maternal circulation of the placenta is completed. If you look at the margin of this recent placenta, and the spaces between the lobes, you will observe some large oval-shaped or irregular apertures with smooth, thin, transparent edges in the decidua. If pressure is made upon the placenta, maternal blood oozes through these from the cavernous structure, which still contains a large quantity of blood. Some of these openings are so irregular that they are evidently lacerations, but there are many others of different sizes which are obviously natural apertures, and all these communicate with the venous system of the uterus, by corresponding openings in the lining membrane, which have been represented in Figure 2, copied and reduced from Rœderer's sixth Plate. If you introduce a blowpipe into one of these openings, the air thrown in will pass chiefly around the edge of the placenta, and will escape at a distance from other similar openings in the decidua. The edges of these apertures in the decidua adhere to the edges of the smooth semilunar or valvular shaped venous apertures, above represented in the lining membrane. The inner membrane of the uterus does not extend from these openings into the cavernous structure of the placenta. The placental decidua and lining membrane of the uterus are structures essentially different from one another during the whole period of pregnancy, and to demonstrate this the microscope is not required : as Mr. Lawrence said, respecting the nerves of the uterus, the "microscope is not required to discover this. It is seen much better with the naked eye than with any magnifier." I am much astonished that any anatomist of reputation should have been misled so far by the microscope, as to conclude that not only the uterine decidua, but the decidua reflexa, is nothing but the altered mucous membrane of the uterus, and that the mucous membrane of the uterus escapes every time a woman is delivered.

If injections be thrown into the bloodvessels of the gravid uterus, they frequently, but they do not invariably, pass through the venous apertures of the decidua into the cavernous structure of the placenta. I now show you two preparations of the gravid uterus, in which, though the bloodvessels were injected with the greatest care, and by those skilled in the art, little or no injection passed into the cavernous structure of the placenta. In *this* gravid uterus, at the full period, not a particle of injection has entered the placenta. In *this*, another uterus, which I shall hand round, and which was taken from the body of a woman who died suddenly of cholera, in the eighth or ninth month of pregnancy, and was injected at my request by Sir Astley Cooper, under the most favourable circumstances, you see that a very trifling quantity indeed of the injection has passed into the placenta, and there is no appearance of any bloodvessel crossing between the inner surface of the uterus and placental decidua. This also happened to Dr. Munro secundus, who was misled by it, as appears by the following letter from Dr. Cullen to Dr. Hunter, written probably about 1760, and published in the first volume of Dr. Thomson's life of Cullen: —

"It will give me the utmost pain to find, upon any occasion, that it is not in my power to do you any service you may desire of me. Happily this is not the case at present. About the beginning of this winter, Dr. Munro, jun., laid before the Philosophical Society a great number of anatomical preparations and drawings. I was present at the beginning of the meeting, but finding it impossible for me, during the short time of our meeting, and amidst a number of other persons, to take any satisfactory view of these preparations, I left the meeting before he began his demonstration, and when I received your letter yesterday I was nowise in a condition to give it an answer. But I found no difficulty in applying myself to Dr. Munro himself, and after talking upon the subject, I even let him know the reason of my inquiry. The result of all is this — among other preparations, he produced to the Society a preparation of a gravid uterus, and a drawing from it. The purpose of both was to determine the nature of the communication between the uterus and placenta. He says, that when he heard you upon that subject, you were of opinion that certain arteries of the uterus pass the internal surface of the placenta, and pour out their blood into the cellular substance of it, to be taken up from thence by the proper vessels of the placenta. He says, he was then, and has always been, of a different opinion, but to determine the matter more certainly he made this preparation. He had injected the vessels of the uterus with coloured wax, the arteries with red, and veins with green, and left those of the placenta without any injection. This injected uterus he cut longitudinally, so as to obtain a section and distinct view, for some length of the uterus and placenta as applied to each other. And from this view he thinks it is evident *that no sensible vessels pass from one to the other*. The vessels of the uterus appear to be perfectly well filled, and in the extremities of the veins the coloured matter is found mixed, but not *a particle of it in the placenta*. Many arteries of the uterus open upon its inner surface, forming many convolutions there, and swelling out on that inner surface, but still manifestly confined, without any appearance of their entering the placenta. He observes that as so many arteries reach the inner surface of the uterus, on separating the placenta several of these arteries may be torn, and give some occasion to the opinion you have formed; but that such a preparation as the present is best fitted to determine this fact, and very strongly supports his opinion of it."

It would, however, be erroneous to conclude, as I did ten years ago, from similar failures and other circumstances, that the maternal blood does not enter the cavernous structure of the placenta by the decidual arteries, and flow back by the decidual veins into the venous system of the uterus, as first demonstrated by John Hunter. It would be equally erroneous to deny, which has often been done, that fibrous tumours of the uterus are destitute of blood-vessels, because injections frequently stop short at the point where the arteries and veins of the uterus communicate with the blood-vessels of these tumours. The repeated examination of the uterus and placenta in their natural state, under water, and when the uterine vessels were filled with injection, having led to no conclusive and satisfactory results respecting the connection of the placenta and uterus, it occurred to me, soon after the publication of my paper in the Philosophical Transactions in 1832, the most likely means of discovering the real connection of these parts would be to examine the placenta when the vessels of the uterus were filled with their own blood, and coagulated. On the 24th May, 1833, such an opportunity presented itself through the kindness of Dr. Girdwood, of Paddington, and that no doubt might exist in the minds of anatomists as to the accuracy of the description, I requested Mr. Lawrence carefully to examine the parts with me, and draw up an account of the appearances which we observed. It was my wish immediately to have published the memorandum, containing an account of these results, but I was dissuaded from doing so by Mr. Lawrence, who thought it better to wait until another opportunity should occur of verifying the observation, and still further elucidating the subject. The facts were, however, immediately made known to Sir Astley Cooper, Professor Owen, Mr. Mayo, and many other members of the profession, who felt interested on the subject, and they were thus stated about a month after, in the Review of Velpeau's Embryology, in the Medical Gazette. "About a month ago, before the preparation at the College of Surgeons was examined by Messrs. Stanley and Mayo, we understand that Dr. Robert Lee, in order as far as possible to obviate every fallacy, examined a gravid uterus in the eighth month, in which he had previously coagulated the maternal blood. He was able to satisfy himself, and Mr. Lawrence, who was present at the examination, that coagula of the maternal blood extended from some of the openings in the lining membrane of the uterus, into canals formed by the deciduous membrane on the margin of the placenta. These vessels or channels in the decidua could be traced only a short distance along the margin of the placenta, and between the lobes."

"Memorandum of appearances observed on the 26th of May, 1833, in the examination by Dr. Lee of a portion of the uterus, with the placenta still adhering to it, said to have been taken from the body of a female who destroyed herself by drowning in the ninth month of pregnancy: —

"The membranes of the placenta were slowly and cautiously detached from the surface of the uterus, to which they retained their natural adhesion. They separated under gentle dragging, leaving the surface of the placenta smooth, soft, whitish, and entire, except at some points towards its circumference, where the adhesion was firmer, and a passage of the vessels, containing coagulated blood, from the uterus to the placenta, was observed. As the coagula were considerable, we supposed at first that they had proceeded from partial detachment of the placenta and membranes, but we soon found this supposition to be erroneous. The placenta, indeed, adhered more firmly at these points. The coagula, which exceeded in size a large writing-quill, were continued through openings of corresponding magnitude into the uterus. When air was impelled into these openings, the internal surface of the uterus was raised, apparently by the distension of the large uterine veins. On the other side the coagula were continued into vessels running on the surface of the placenta, or of the membranes at its circumference. When these, which were extremely thin in their coats, were slit open, the internal surface was smooth, like that of a vein. They were large where they commenced at the uterine orifices, but soon lessened, so that they could not be followed more than an inch or two. Their termination was obscure, and its precise mode was not ascertained. Although the placenta adhered to the uterus, at the points where these vessels entered it, more firmly than in other situations, their texture was so delicate that it separated even here without the employment of much force.

"In separating one half of the placenta from the uterus, the passage of vessels between them was observed at four or six points.

"On the surface of the placenta, in the rest of its extent, there were numerous small tortuous vessels; and similar ramifications were seen on the surface of the uterus. We could not see any open orifices belonging to those vessels on the surface of the placenta, nor ascertain that they derived their origin from the uterus. — I am, sir,

"Your obedient servant,
"W. Lawrence."

LECTURE XIV.

ON THE DISCOVERY OF THE STRUCTURE OF THE PLACENTA, THE FŒTAL CIRCULATION, THE FUNCTIONS OF THE INTESTINES, LIVER, AND KIDNEYS OF THE FŒTUS, AND ITS GENERAL APPEARANCE IN THE LATTER MONTHS OF PREGNANCY.

From the facts which were stated in the last lecture, it appears that the placental decidua, the fœtal circulation of the placenta, the cavernous structure, and its connection with the venous system of the uterus and the decidual arteries, had all been described and delineated before the publication of Dr. Hunter's engravings of the gravid uterus in 1774. The Hunters, therefore, cannot, without injustice to those who preceded them, be considered as entitled to the honour of contributing any new facts to the anatomy of the placenta, except the two following, viz., the termination of the decidual arteries in the cavernous structure, and the existence of a layer of decidua on the fœtal surface of the organ. But this places their merits in a far more exalted and conspicuous view than if they had made fresh discoveries in the anatomy of the placenta; for by reasoning upon appearances which had previously been seen by others, they drew conclusions which no physiologists before them had been able to draw. Rœderer, in 1759, saw everything that John Hunter saw in 1754, and yet remained entirely ignorant of the anatomy and physiology of the placenta. The discovery of the circulation of the maternal blood in the placenta, made by the Hunters, which throws so much light upon the whole economy of the fœtus, especially the processes of respiration and nutrition, will be regarded in all future ages as one of the greatest that has ever been made in human anatomy, and as second only to the discovery of the circulation of the blood by Harvey. That Mr. Hunter looked upon it in this light in 1780, when he contested the honour of the discovery with his brother so warmly before the Royal Society, there can be no doubt. Admitting the statements in this paper to be correct, although neither Dr. Fordyce, nor any other gentleman to whom he appealed in support of their truth, as far as I can learn, ever came forward to bear witness in his favour, Mr. Hunter was certainly bound by gratitude, and by all the principles of honour and justice, to have made this claim before Dr. Hunter published his work in 1774, or never to have made it at all. It must never be forgotten that Dr. Hunter remained ignorant of Mr. Hunter's claim for twenty-five years, during the whole of which time he had considered himself, and had been regarded by others, as solely entitled to the distinguished honour of this discovery; that thirteen of these twenty-five years were devoted to the investigation of the anatomy and physiology of the placenta, and that our knowledge of the structure and functions of the organ has been derived chiefly, if not entirely, from the dissections, lectures, and publications of William Hunter.

Before taking leave of this subject, I shall read to you an extract from Mr. Hunter's paper on the Structure of the Placenta, presented to the Royal Society in 1780, which contains an account of the manner in which he says the discovery was made by him in 1754. "The late indefatigable Dr. M'Kenzie, about the month of May, 1754, when assistant to Dr. Smellie, having procured the body of a pregnant woman, who died undelivered at the full term, had injected both the veins and arteries with particular success; the veins being filled with yellow, the arteries with red. Having opened the abdomen and exposed the uterus, he made an incision into the fore part, quite through its substance, and came to what seemed to be an irregular mass of injected matter. The appearance being new, he proceeded no further, and greatly obliged me, by desiring my attendance to examine parts in which the appearances were so uncommon. The examination was made in his presence, and in the presence of several other gentlemen whose names I have now forgotten; but I have reason to believe that some are settled in this country, who, I hope, will have an opportunity of perusing this publication. I first raised, with great care, a part of the uterus from the irregular mass, and in doing this observed regular pieces of wax passing obliquely between it and the uterus, which broke off, leaving part attached to that mass; and on attentively considering the portions towards the uterus, they plainly appeared to be a continuation of the veins passing from it to this substance, which proved to be placenta. I likewise observed other vessels, about the size of a crow-quill, passing in the same manner, although not so obliquely; these also broke on separating the placenta and uterus, leaving a small portion on the surface of the placenta; and on examination they were discovered to be continuations of the arteries of the uterus. My next step was to trace these vessels into the substance of what appeared placenta, which was first attempted in a vein; but that soon lost the regularity of a vessel, by terminating at once upon the surface of the placenta, in a very fine, spongy substance, the interstices of which were filled with yellow injected matter. This termination being new, I repeated the same kind of examination on other veins, which always led me to the same terminations, never entering the substance of the placenta in the form of a vessel. I then examined the arteries, tracing them in the same manner towards the placenta, and found that having made a twist, or close spiral turn upon themselves, they were lost on its surface. On a more attentive view, I perceived that they terminated in the same way as the veins; for opposite to the mouth of the artery the spongy substance of the placenta was readily distinguished, with the red injection intermixed. Upon cutting into the placenta, I discovered, in many places of its substance, yellow injection, in others red, and in many others these two colours mixed. The substance of the placenta, now filled with injection, had nothing of the vascular appearance, nor that of extravasation, but had a regularity in its form, which showed it to be naturally of a cellular structure, fitted to be a reservoir for blood. I perceived, likewise, that the red injection of the arteries (which had been first injected), had passed out of the substance of the placenta, into some of the veins leading from the placenta to the uterus, mixing itself with the yellow injection; and that the spongy chorion, called the decidua by Dr. Hunter, was very vascular, its vessels going to and from the uterus being filled with different coloured injections. After having considered these appearances, it was not difficult for me to determine the real structure of the placenta, and course of the blood in these parts; but the company, prejudiced in favour of former theories, combated my opinion, and it was even disputed whether or not these curling arteries could carry red blood. After having dissected the uterus with the placenta and membranes, and made the whole into preparations tending to show the above facts, I returned home in the evening, and communicated what I had discovered to my brother, Dr. Hunter, who at first treated it and me with good-humoured raillery; but on going with me to Dr. M'Kenzie's, he was soon convinced of the fact. Some of the parts were given to him, which he afterwards showed at his lectures, and probably they still remain in his collection. Soon after this, Dr. Hunter and I procured several placentæ, to discover if, after delivery, the termination of the veins and the curling arteries could be discovered: they were discernible almost in every one, and by pushing a pipe into the placenta we could fill not only its whole substance, but also the vessels on that surface which was attacked to the uterus, with injection. The facts being now ascertained, and universally acknowledged, I consider myself as having a just claim to the discovery of the structure of the placenta, and its communication with the uterus, together with the use arising from such structure and communication, and of having first demonstrated the vascularity of the spongy chorion." In a note to this paper, Mr. Hunter says, "I was indeed so tenacious of my claim to the discovery, that I wrote this account in Dr. M'Kenzie's life-time with a design to publish it, and often communicated my intentions to Dr. George Fordyce, whom I knew was very intimate with the doctor, in consequence of both teaching in the same place, and making many experiments together; therefore, he is a kind of collateral witness, that what I now publish is the same account which I gave in Dr. M'Kenzie's life-time." He assigns no reason for concealing this intention from his brother for twenty-five years; nor is there any explanation of this offered in his letter to the Royal Society in reply to his brother's.

The following letter, which I extracted from the Archives of the Royal Society ten years ago, is probably the last letter written by William Hunter, who died in 1783, which has been preserved, and it displays the same magnanimity of character, under the most trying circumstances, for which he had been so distinguished during the whole of his glorious career.

"Windmill Street, Feb. 3, 1780.

"Dr. Hunter begs the favour that the secretary to the Royal Society will read to the Society what follows. Mr. Hunter's account of the structure of the human placenta, explaining the connection and circulation between the mother and the fœtus in utero, which was read at the last meeting of the Royal Society, informs us that it was a discovery which he made with Dr. M'Kenzie, and that it was not claimed by me. The Society will be sensible that I am reduced to the necessity of taking notice of this mistake, when they are informed of the following facts: — 1st. That the doctrine has been many years ago published in printed books as my discovery, and had been communicated as such by myself. See Baron Haller, for instance, in the second part of the eighth volume (p. 220) of his great Physiology, in quarto, printed thirteen or fourteen years ago. 2dly. Besides treating of it as my own discovery, in my lectures upon the subject, I have always done so for many years last past in the very first lecture of my course, which is the most public of all, because the door is then open to every person whose curiosity prompts him to be present. In the third place, occasionally, both in what I have printed and in my lectures, I hope I have not overlooked opportunities of doing justice to Mr. Hunter's great merits, and of acknowledging that he had been an excellent assistant to me in this and in many other pursuits. By doing so I always feel an inward gratification — shall I call it pride? I had given him all the little anatomical knowledge which I could communicate, and put him into the very best situation that I could for becoming what this Society has for some time known him to be. May it be presumed, then, that I stand possessed of the discovery in question, till proof shall be brought to dispossess me? I shall most willingly submit to the pleasure of this Society. If they signify an unwillingness that this emulation (I will call it) should go on, I shall acquiesce, and be silent. If curiosity, justice, or the laws and practice of the Society, should incline the Council to seek out and determine upon the merits, I shall be equally ready to obey their commands. And if it should appear reasonable to them, I would first beg to know the grounds of Mr. Hunter's claim, as I am too well acquainted with his abilities not to think that he must be able to support his claim by something that I am ignorant of; and if I should receive that satisfaction, I shall immediately show that I am more tenacious of truth than even of anatomical discoveries; but if that information should not alter my thoughts upon the question, I shall show to the satisfaction of the Society, if I can at all judge of my own employments and pursuits, that my pretensions arise out of a long series of observations and experiments, made with a view to the discovery in question; that it was not a random conjecture, a lucky thought, or accidental occasion, but a persevering pursuit for twelve or thirteen years at least, the progress of which was always publicly known here, and admits of the most circumstantial proof. — William Hunter."

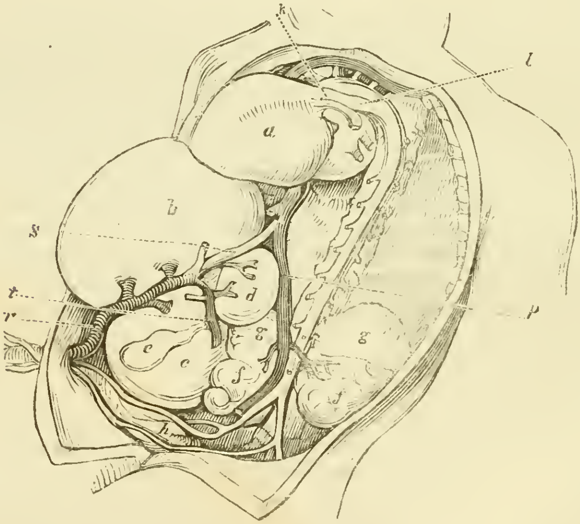
As Mr. Hunter's reply contains no new facts in addition to those stated in the preceding extract from his paper, it is unnecessary to read this to you, but if you feel a desire to peruse it, you will find it in Palmer's edition of John Hunter's Works, vol. i., p. 79.

Fœtal circulation. — The blood of the fœtus is of an uniform dark colour, like venous blood, but quickly assumes a bright florid tint on exposure to atmospheric air. It coagulates on standing, though it contains much less fibrin than adult blood. It has corpuscles, which resemble, in a striking manner, those seen through a good microscope in common blood. Dr. Jeffreys, of Glasgow, stated, many years ago, in his Thesis, that the blood in the umbilical vein is of a light scarlet colour, like arterial blood, and that the blood in the arteries is like venous blood. Bichat made experiments on the guinea-pig, but he never could perceive any difference between the blood of the umbilical arteries and veins. I think it extremely probable that the blood returning from the placenta is of a more florid colour than that proceeding to it; but it is very difficult to demonstrate that it is so. I have frequently put two ligatures quickly around the cord while the blood was circulating in it, but I could discover no difference of colour through the sheath. I have placed the portion of cord with the vessels full of blood in a crystal jar full of water, but still the difference was not visible. I have also frequently examined the blood which has escaped from the vein and arteries immediately after the division of the cord, and I have sometimes thought I saw a difference, at other times none. Almost the instant the blood, both of the arteries and vein, comes in contact with the air, the colour is changed; and this renders it so difficult to tell whether there does actually exist a difference of colour in the blood proceeding to the placenta and returning from it.

The umbilical vein, on passing into the great fissure of the liver, as you see in this preparation, forms an arch, from which there are given off several great branches, which proceed to ramify in the left lobe. The vein, much reduced in size, passes forward, and then gives off the ductus venosus, which terminates in the vena cava. The ductus venosus is small where it leaves the umbilical vein, and its orifice is still further diminished by a kind of valve formed by a doubling of the inner coats of the vessel, which was first described by Bichat. The umbilical vein, still further reduced in size, goes forward a few lines, and unites with the trunk of the veins which bring the blood back from the principal abdominal viscera.

This trunk of the abdominal vein and the umbilical vein, after giving off the ductus venosus, unite, and form a large venous trunk of three or four lines in length. This great vein subdivides into a number of large branches, which principally supply the right lobe of the liver. The whole blood of the umbilical vein, and all the blood of the vena portæ, except what passes through the ductus venosus into the vena cava, which is probably a very small quantity, circulates through the fœtal liver before reaching the right auricle of the heart. The hepatic veins, which, you see, are large and numerous, collect the blood from all parts of the liver, and convey it into the vena cava ascendens close to the right auricle. Some physiologists believe that this blood from the liver passes directly from the vena cava ascendens through the right auricle by the foramen ovale into the left auricle; while the right auricle is distended entirely with the blood of the vena cava descendens, which brings back the blood from the head and superior extremities. I believe the two currents meet, and partially mingle in the right and left auricle, and that both these cavities are filled at the same time with equal quantities of blood, and that they are emptied at the same instant by the simultaneous contrac-

Fig. 37.*



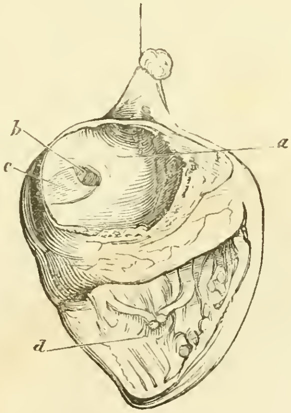
* *a*, heart; *b*, left lobe of the liver turned back; *c*, right ditto; *d*, lobula Spigelii; *e*, gall-bladder; *f f*, kidneys; *g g*, glandulæ renales; *h*, urinary bladder, of a conical shape: the urachus is seen extending up to the umbilicus; *i*, aorta, giving off the intercostals, &c.; *k*, pulmonary artery, the left branch observed cut; *l*, *Ductus arteriosus; m m*, *Umbilical arteries* arising from the internal iliacs, running up one on each side of the bladder, and passing out at the navel; *n*, left subclavian vein; *o*, two of the pulmonary veins, terminating in the left auricle; *p*, inferior cava; *q*, vena cava hepatica; *r*, *Umbilical vein; s*, *Ductus venosus*, the continuance of the umbilical vein; *t*, vena portæ.

tion of their walls. The blood of the left auricle passes into the left ventricle and the aorta, from which it is distributed to the head and upper extremities, by the arteria innominata and left carotid and left subclavian arteries. But the whole blood of the left auricle and ventricle is not expended upon the head and upper extremities, and a large quantity is conveyed forward by the aorta, to meet and mingle with the blood of the right auricle and ventricle conveyed into the aorta by the ductus arteriosus. At the junction of the aorta and ductus arteriosus, the whole blood of the right ventricle mixes with the remaining blood of the left ventricle, after the head and upper extremities have been supplied. The aorta and ductus arteriosus, which passes off from the root of the pulmonary artery, and exceeds it in diameter, as you see in the preparation, unite a short way from the heart, and form the thoracic and abdominal aorta, which terminates, after supplying the viscera and lower extremities, in the two internal iliac or hypogastric arteries, which you see passing up by the sides of the bladder to the umbilicus, where they enter the cord and form the umbilical arteries. Both ventricles contract at the same time, and the force of both is exerted in propelling the blood of the aorta and umbilical arteries forward to the placenta, to be returned, after circulating through its capillary vessels, by the umbilical vein to the liver, as I have now described.

In the preceding representation of the fœtal circulation, from Tiedemann, you will see that the termination of the umbilical vein in the trunk of the abdominal veins, or vena portæ, is not correctly delineated. The figures of the fœtal heart and thymus gland are from Dr. F. H. Ramsbotham's lectures.

In this fœtus, which was stillborn, you see that the lungs do not come into view when the thorax is opened, but that they occupy the back part of the chest, and that the pericardium and thymus gland lie behind the sternum. If the lungs are taken out, you see that they are of a dark colour, but very different in density and general appearance from the liver. If a small portion of lung be cut off and dropped into water, it immediately sinks. If a little air be introduced into one of the bronchial tubes of another portion by the blow-pipe, you see how suddenly its dark

Fig. 38.*



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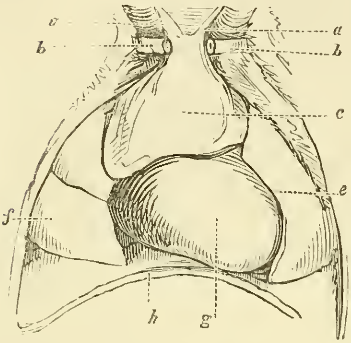
* Fœtal heart of the natural size; the auricles and ventricles are cut open, their septa being preserved; it is suspended by the superior cava; *a*, cavity of the right auricle; *b*, foramen ovale; *c*, the valve of the foramen, partly drawn over the aperture; *d*, cavity of the right ventricle.

colour is converted into a light yellow hue, and that it floats if thrown into water. I showed you very lately the lungs of a child which had breathed for a short time after birth, and yet they sank in water as if no air had entered them. In cases of suspected child-murder this may lead you to be cautious in the evidence you give.

Fig. 39.*



In the following figure you have a representation of the thymus gland, about the anatomy and physiology of which I am unable to say any thing at present that is satisfactory. I am disposed, however, to believe that Hewson's account of this body is the most correct that has yet been given.

The early appearance of the fœtal liver, its great size during the whole period of gestation, the large supply of blood which it receives from the placenta and vena portæ, are circumstances which clearly indicate that the liver performs some very important function in the economy of the fœtus. From observing the great disproportion which exists between the size of the liver and the hepatic duct, and the quantity of bile secreted, Bichat was led to conclude that the liver had some other function to perform than the secretion of the bile. Compare, he says, the size of the kidney with the quantity of urine secreted, and you will draw this inference; but he confessed that he was totally ignorant of the nature of this function of the liver.

The bile has usually been regarded as an excrementitious fluid, the extraction or separation of which from the blood serves the purpose of maintaining it in a condition fit for the support of life, and that the liver accomplishes this purpose by extricating carbon and hydrogen from the blood as the lungs do in the adult. The liver has usually, therefore, been regarded in the fœtus as an organ auxiliary to the placenta, and in the adult, to the lungs.

I have examined the liver and intestines in many fœtuses of different ages, and from the appearances observed in these, it seems not improbable that the liver performs an important function connected with the nutrition of the fœtus.

The liver and intestines are visible in the fœtus at a very early period. Between the second and third month they are copiously supplied with blood, and during the whole period of gestation they occupy a large portion of the abdominal cavity. The pancreas and spleen can also be distinctly perceived between the second and third month after conception, but they are sparingly supplied with blood, and they remain small and imperfectly developed during the existence of the child in utero.

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* *a a*, carotid arteries; *b b*, clavicles; *c*, thoracic lobe of the thymus; *d d*, cervical cornua of the same gland; *e*, left lung; *f*, right lung, neither yet expanded; *g*, heart, covered by the pericardium, its principal part appearing between the collapsed lungs; *h*, diaphragm, very convex towards the chest.

In all the intermediate periods, from the fourth to the end of the ninth month, the small intestines are much more vascular than the stomach and great intestines. The mucous membrane of the upper portion of the small intestines is of a bright rose red colour, while that of the ileum and colon is comparatively pale and bloodless. In a fœtus of eight months, the length of whose body was eighteen inches, the small intestines, when fully extended, measured nine feet six inches, and the great intestines two feet.

The substances contained in the stomach and different portions of the intestinal canal I carefully collected, and they were analysed by Dr. Prout, who found that in their composition they bore a striking analogy to the contents of the alimentary canal of the adult, where the processes of assimilation and absorption are performed.

The stomach of the fœtus is usually distended with a semi-transparent, ropy, mucous, and occasionally ascescent fluid, without any sensible admixture of albuminous or other apparently nutritious matter.

In the duodenum, and part of the remaining portion of the small intestines, there is uniformly present, adhering closely to the mucous membrane, a semi-fluid matter, possessing properties decidedly of an albuminous character, and having an orange or pink colour. This matter is always found in greatest abundance around the papillary projection, through which the common duct of the liver opens into the duodenum. In the lower half of the small intestines, the quantity of this albuminous matter is greatly diminished, and near the colon it almost entirely disappears. The colour also of the contents of this lower portion of the small intestines is different from that noticed in the contents of the duodenum, being of a greenish tint, and assuming more and more the characters of the meconium as the distance from the origin of the colon diminishes. These different substances are generally found slightly ascescent. The great intestines are much more distended than the small intestines, and contain throughout a dark green, homogeneous, generally neutral, or slightly alkaline fluid, in which no albuminous matter can be detected, and which is to be considered as excrementitious.

The absence of albuminous matter in the stomach of the fœtus, its invariable presence in the upper half of the small intestines, its gradual diminution as we proceed downwards, and its disappearance in the colon, are circumstances which, viewed in connection with the great length of the small intestines, already noticed, seem to prove that the absorption of some nutritious substance takes place from the intestinal canal in the latter months of pregnancy, in like manner as it does after birth.

The observation, that the lacteals contain a similar fluid, would be sufficient to render the preceding physiological view a matter of demonstration. In no instance, however, have I succeeded in detecting these vessels in the mesentery of the human fœtus, though I have perceived them distinctly in the mesentery of the calf. The late Professor Bennet, in one instance, saw these with me in the mesentery of a calf of seven months; and the case of a child born with deficiency of the abdominal parietes has been recorded by M. Adelon, in his work on Physiology, in which the lacteals were observed, at the time of birth, to be distended with chyle.

The source of this nutritious matter in the upper part of the small intestines of the fœtus was the next subject to which my attention was directed; and from having observed in every instance the same orange-coloured fluid in the small intestines, collected in great abundance near the orifice of the ductus communis choledochus, and taking into consideration the magnitude of the fœtal liver, and the large supply of blood which it receives from the umbilical vein, it appeared to me reasonable to infer that this viscus must be the source of the matter in question. Additional weight was given to this conclusion, by having detected, in two instances, in the hepatic duct, the presence of a fluid possessing not only some of the sensible, but also some of the chemical properties of that which was found in the duodenum.

According to the preceding view, absorption takes place in the placenta of certain nutritious matters from the maternal blood, which are carried along with the blood of the umbilical vein to the liver. It there circulates through the substance of this organ, that an albuminous or chylous fluid may be formed, and poured into the duodenum, there to undergo changes similar to those which are observed in adults.

Functions of the Fœtal Kidneys. — In the works of systematic writers on physiology, there is little or no positive information contained respecting the functions of the kidneys previous to birth. Haller, Blumenbach, Meckel, Bostock, and Mayo, have scarcely alluded to the subject, and Magendie states that the condition of the fœtal kidneys has not been ascertained. All the glands employed in digestion have a considerable volume in the fœtus, and possess some activity. The action of the others, he adds, is little known. It is not known, for example, whether the kidneys form urine, or whether this fluid passes by the urethra into the cavity of the amnion. Abernethy was of opinion that the kidneys did not secrete urine till after birth, though some of the older writers believed the liquor amnii to be chiefly formed of the urine of the fœtus.

The following facts seem to demonstrate that the kidneys of the human fœtus, like the liver, intestinal canal, and thymus gland, are in a state of activity, and perform each their respective functions, prior to birth.

On the 2d of January, 1835, Mr. Hay, of Osnaburgh Street, attended a patient who was delivered in the eighth month of a still-born female child. It had a double hare-lip, both its feet were clubbed, and the abdomen was so large that it passed with difficulty through the pelvis. Mr. Hay examined the body on the following day, and he found the distension of the abdomen to arise from an accumulation of fluid within the kidneys, produced by an impervious state of the ureters. The right kidney, which resembled a thin cyst filled with watery fluid, was larger than the head of the child; the left did not exceed half its bulk. Both kidneys were removed from the body without the fluid they contained having escaped, and were in this state presented to me by Mr. Hay. I made an opening into the pelvis of the left kidney, and four ounces of a fluid resembling urine flowed out; the pelvis of the right kidney contained nine ounces of a fluid having the same appearance, which was collected and given to Dr. Prout for analysis. [The kidneys and impervious ureters were here exhibited.] The results which Dr. Prout obtained are stated in the following letter: —

"Dear Sir, — I send a short account of the fluid from the kidney of a fœtus in whom the ureter was found obliterated.

"The fluid was of a deep brown colour, somewhat like diluted porter or table-beer; transparent, and without any remarkable smell. Specific gravity about 10·12; very slightly acid.

"On exposure to heat it became opaque, and deposited flakes of albuminous matter, which was next examined, by the addition of an acid. The deposit was of a deep brown colour, the separated fluid nearly colourless, and deposited on cooling a considerable quantity of lithic acid crystals.

"When evaporated to dryness, and treated with alcohol, that menstruum was found to take up a principle strongly acid, and which assumed readily an imperfect crystallized form. I cannot venture to give this principle a name: it somewhat resembled the acid called amniotic, or rather allantoid, in some of its properties, but differed from it in others. The alcoholic solution gave, at first, faint and somewhat doubtful, but afterwards unequivocal traces of urea. After the albuminous matter was separated, ammonia produced a deposition of triple phosphate.

"These results prove, beyond a doubt, that the fluid was of a urinary nature, and render it probable that, as the liver in the fœtus secretes bile, so the kidneys secrete urine, long anterior to birth; and that in a perfect state of the organs this fluid is constantly escaping through the bladder, and mixing with the amniotic. This fact has been often suspected, or rather taken for granted, but has never, to my knowledge, been proved.

"I send a portion of the fluid containing a deposition of lithic acid crystals.

"W. PROUT.

"Sackville Street, January 9, 1835."

Supra renal capsules. — The supra renal capsules are situated at the upper part of the kidneys, and united to them by cellular membrane. They are of a triangular form, and are flat before and behind. Their surface is of a yellow colour, and marked by irregular fissures. Some anatomists consider them as two prolonged contiguous cavities, and state that they are filled with a white albuminous fluid. Meckel thinks the appearance of a cavity in them is artificial. They have no excretory duct. They are visible in the embryo at two months, and they diminish after birth. Their arteries are from the diaphragmatic and renal, and their nerves from the great sympathetic. The supra renal capsules are sometimes very small or wanting, coinciding with an imperfect development of the brain. This often accompanies deficiency of the brain, and congenital hydrocephalus.

Until the seventh or eighth month, the *testes*, covered with peritoneum like the ovaria, are situated immediately below the kidneys, or the fore part of the psoæ muscles, and by the side of the rectum, where it is passing into the pelvis. In the course of the eighth month they usually descend into the scrotum, and sometimes in the seventh I have found them out of the abdominal cavity, and in the upper part of the scrotum.

There are, upon the table, a number of embryos and fœtuses of all ages, from the end of one to the end of nine months. If you examine these carefully, you will not find much difficulty hereafter in fixing the age of fœtuses that you may see with sufficient precision. Not only in the size, but in the general appearance, you observe what a marked difference there is between an embryo of two and four, and a fœtus of seven and nine months. At the full period the fœtus usually weighs eight or nine pounds, and measures about a foot and a half. The head is the largest and heaviest part of the fœtus, and therefore it is usually the most depending part, and lies over the cervix uteri, while the nates are at the fundus. The chin rests upon the thorax, the arms are placed over the chest, and the knees are drawn up to the abdomen, as represented in the illustrations to Lecture XII. *This* fœtal skull, you see, is of an oval shape, and measures about four inches from the forehead to the occiput, and three between the parietal protuberances. The bones of the cranium, you observe, are not united together as in the adult. Between the occipital bone and the two parietal bones there is a triangular space left, called the posterior fontanelle. The sagittal suture runs forward between the parietal bones to the anterior fontanelle, which is larger than the posterior fontanelle, and has a quadrangular shape.

These are all the observations I have to offer on the anatomy of the gravid uterus; which is the very foundation of midwifery.

LECTURE XV.

ON THE DIAGNOSTIC SYMPTOMS OF PREGNANCY, AND ON THE BEST METHOD OF ASCERTAINING THE EXISTENCE OF PREGNANCY WHEN CONCEALED, COMPLICATED, OR FEIGNED.

In describing the growth and enlargement of the uterus during pregnancy, I observed that cessation of the catamenia, sense of fulness, weight, or uneasiness in the region of the uterus and bladder, irritability of the stomach and of the whole nervous and vascular systems, are the most common symptoms of early pregnancy. Though the uterus, at the end of the second month, be nearly twice as large as in the unimpregnated state, its fundus cannot be felt in the hypogastrium, and except a little fulness and softness, there is no change in the orifice and cervix. In the third month, the lips of the os uteri are thick and soft, and the finger can be introduced a little way within them, and the Nabothean glands felt enlarged. The neck of the uterus is also thicker, softer, and more elastic, than before conception. The fundus uteri can sometimes be distinctly perceived above the brim of the pelvis at the end of the third month, but more frequently it cannot before the end of the fourth. About twelve weeks from the period of impregnation the circulation of the blood in the walls of the uterus can occasionally be heard; but the pulsations of the fœtal heart are seldom perceptible before the fifth month. The body of the uterus, after the middle period of pregnancy, continues to enlarge till the end of the ninth month; while its cervix is gradually becoming shorter, and the orifice thicker and softer. The umbilicus protrudes, and white lines are seen on the sides of the abdomen. Not only can the sound of the fœtal heart, and the pulsations of the uterine bloodvessels, be distinctly heard during the latter months, but the movements of the fœtus can be felt by applying the hand over the uterus. The areolæ become broad and dark, and the glands around the nipples enlarged, and milk is often secreted.

In some women conception is immediately followed by nausea and vomiting in the morning, or dislike to food which they had previously relished. In many this irritability of the stomach on rising in the morning is not observed till a month or six weeks have elapsed, and then it occurs in a severe form, and continues nearly the whole of the day, and a great part of the food taken is rejected by vomiting. The morning sickness usually disappears, or becomes less distressing, about the middle period of pregnancy, but in some it continues till the time of delivery. Some women never experience any uneasiness from nausea and sickness in the morning, at any period of pregnancy, and others suffer only from cardialgia and other symptoms of dyspepsia. This sympathetic affection of the stomach has been repeatedly described to me as different from sea-sickness and nausea, and vomiting produced by every other cause. Many women also experience during the first two or three months, or for a much longer period, after conception, sympathetic disturbance of the brain, indicated by headache, flushing of the countenance, drowsiness during the day, disturbed sleep, and frightful dreams at night, unusual irritability of temper, toothache, and other painful nervous affections, and all the forms of hysteria. The features usually become pale and thin, and the general aspect of the countenance changed. It is necessary, however, always to remember, when investigating cases of concealed, complicated, and feigned pregnancy, and the diseases which resemble it, that all these symptoms may be observed when pregnancy does not exist. Suppression of the catamenia is the occurrence by which the greater number of women first know that they are pregnant; but this also may take place without pregnancy. I believe, from the anatomy of the gravid uterus, and other circumstances, that regular menstruation never takes place during pregnancy; but many of the best writers on midwifery are of a different opinion, and relate cases in which, from the quantity and appearance of the fluid discharged periodically from the gravid uterus, they considered menstruation to have repeatedly occurred during pregnancy. I have seen a considerable number of women who have stated that they always continued to menstruate for several months after conception, but I had no means of verifying their statements by comparing the fluid discharged with the catamenial fluid. It is best, for practical purposes, to admit that periodical discharges take place occasionally, though not frequently, from the gravid uterus, like menstruation, and that we have no opportunity of proving that they differ. Dr. Heberden has related at least one case of what he believed to be menstruation during pregnancy. Daventer gives the history of a woman who violated the established laws of nature by never menstruating except during pregnancy. Dewees and Baudelocque have recorded similar cases; and Dr. Evory Kennedy, if I recollect right, states that he has met with two individuals who, if their own statements could be credited, were similarly circumstanced. "We must not conclude," observes Dr. Blundell, "that a woman is not pregnant merely because she menstruates; for although doubts may be raised respecting the continuance of the catamenia during the whole of gestation, yet I have repeatedly met with cases of pregnancy in which the catamenia have continued to flow during the first two or three months. Indeed this, notwithstanding Dr. Denman's assertion to the contrary, may, I think, be looked upon as by no means very uncommon." "We have met with several instances of menstruation occurring once after conception," observes Dr. Montgomery, "and at this moment we are in attendance on two ladies to both of whom it happened; and one of them, who has borne three children, and is now a fourth time pregnant, assured us that she always knew when she had become with child by the unusual profuseness of the next period." This is distinctly taken notice of by Johnson, who says, "Some have the menstrua copiously at the first period." A diminution of the quantity under similar circumstances has, however, been more frequently observed. "I have seen," says Desormeaux, "some cases in which the appearance of the menses in small quantity, and at an unusual time, was almost a certain sign of conception." A similar remark is made by Puzos, Stein, and Gardien. These are merely a few exceptions to the general rule, that menstruation disappears entirely after conception.

The hypogastrium begins to enlarge at some women in the end of the second month, and the fundus uteri can be felt above the brim of the pelvis in the course of the third month. Much more frequently the fundus cannot be distinctly felt in the hypogastrium till the middle period of pregnancy, when the movements of the fœtus are first felt by the mother, or quickening takes place. In a few instances these movements, at first feeble and indistinct, have been perceived as early as the fourth month, or even before this time. As gestation advances they become gradually stronger, and can be felt when the hand is applied over the abdomen, or even seen through the parietes. Some women are unable to fix the time of quickening; in others it occurs suddenly, and is accompanied with faintness and hysterical symptoms. Quickening does not arise from the communication of life to the fœtus at the moment, nor from the gravid uterus suddenly rising out of the pelvis, or from the removal of pressure from the iliac vessels. It is most probably produced solely by the movements of the fœtus itself, and occurs as soon as the lower extremities are sufficiently developed to enable them to strike against the walls of the uterus with sufficient force to be felt by the mother. In the latter months, one of the best means which can be employed for the detection of pregnancy, when concealed, is to press firmly, and for some time, the points of the fingers against the opposite sides of the uterus, which occasions uneasiness to the fœtus, and makes it move briskly. The same effect is produced occasionally by the stethoscope pressed against the uterus, and the movements are distinctly felt before the pulsations of the uterine bloodvessels or fœtal heart have been heard.

In 1822, M. Kergaradec published a memoir on auscultation, in which he stated that if the naked ear, or with the stethoscope interposed, be applied to the abdomen of a pregnant woman, provided the pregnancy be at a sufficiently advanced stage, in almost every instance, we can observe, at some part of the uterus, a peculiar sound, bearing more or less resemblance to that emitted by the action of bellows, and which he termed the placental souffle, from the circumstance of his having observed it at that part of the outer wall of the uterus corresponding, as he believed, to the spot where the placenta was attached internally. It is now quite certain, that this sound, which can be heard in a large proportion of cases during the last five months of pregnancy, and sometimes as early as the end of the third month, depends upon the circulation of the blood in the arteries and veins distributed through the walls of the gravid uterus, and can often be distinctly perceived at a distance from the part where the placenta is adhering to the inner surface. It resembles sometimes the blowing of air, the continuous murmur of the sea, the sound emitted by the action of bellows, or rather a peculiar rasping sound. It has been described by Dr. Kennedy as resembling, in some cases, the cooing of a dove, the drone of a bag-pipe, or the deep sound produced by the vibration of the strings of a violin. It is more a rasping sound than the sound of bellows, or anything else. It is always synchronous with the mother's pulse, and can be heard over a greater extent of the surface of the uterus than what is occupied by the placenta within. It is heard sometimes in the course of the linea alba, but more frequently on the sides of the abdomen, between the umbilicus and ilium. From hearing this placental souffle, uterine sound, or uterine pulse, as I have been accustomed to call it, and still oftener from hearing the fœtal heart, I have repeatedly ascertained the existence of pregnancy at once, almost the instant the stethoscope had touched the abdomen, where women have been in the act of declaring that pregnancy was impossible. But there are some cases where this sound is indistinct, or where it cannot be heard at all, though the patient be placed upon the back, with the knees drawn up, and nothing covering the abdomen but the shift, and no noise in the apartment to interfere with the auscultation, and the instrument be employed in the most proper manner. In some cases I have not succeeded in hearing the uterine sound, when I could distinctly feel the fœtus kicking against the end of the stethoscope. This cannot be attributed justly to a want of experience in the employment of auscultation, for it occurred on two occasions both to Dr. Hope and myself, in the lying-in ward of the St. Marylebone Infirmary, where there was no noise around us. It is necessary also to be aware that this sound may be heard in the abdomen of some women who have ovarian cysts and tumours of the uterus, and who are not pregnant. On the 20th Sept. 1839, in St. George's Hospital, a sound corresponding with the pulse of the patient, and exactly resembling the placental souffle, was heard between the umbilicus and ilium in a case of ovarian cysts with fluctuation. I requested Dr. Hope to examine the patient with the stethoscope, and he heard the sound distinctly, and informed me that he had related similar cases, in the second edition of his work on Diseases of the Heart. Dr. Montgomery relates a case of large fibrous tumour of the uterus, in which this sound was distinctly heard, and another in which the spleen was supposed to be enlarged, and in which this sound was distinctly audible. "It is unnecessary to mention," observes Dr. E. Kennedy, "to those unacquainted with the stethoscope, that they may be deceived by other sounds, either from their resemblance to the placental souffle, or the effect they have in concealing this. The respiratory murmur is sometimes conducted from the lungs along the thoracic to the abdominal parietes, and may embarrass, but can scarcely deceive us, particularly if we be acquainted with or prepared to expect it. The sonorous rale resembles somewhat the placental sound; and this I have frequently met with, conducted over the abdomen in the same way as the respiratory murmur. We can invariably discriminate this by its corresponding in frequency with the respiration, as calculated by the heaving of the chest, whilst the placental sound is synchronous with the pulse at the wrist; or, in other words, we ought, generally speaking, to count three placental for one respiratory or sonorous rale." The practical inference from all these observations is, that the placental souffle cannot be regarded as an infallible test of pregnancy, as the sound of the fœtal heart undoubtedly is, whenever it is distinctly heard.

Dr. Mayor, of Geneva, in 1818, first heard the pulsations of the fœtal heart through the uterine and abdominal parietes, by applying the ear to the abdomen of a woman far advanced in pregnancy. "Here, however," Dr. Kennedy observes, p. 59, "his discovery stopped; nor did he seem to have been aware of the extent of benefit from a knowledge of this important fact; so, at least, we have a right to infer, from his neglecting to pursue it further." The pulsations of the fœtal heart are clear, rapid and double, like the pulsation of the heart in new-born children, varying generally from 130 to 150 in the minute, and not influenced by the heart of the mother. If the fœtus be alive, and the uterine region be explored with sufficient care, the pulsations of the heart can generally be detected on the sides of the uterus, and when heard clearly, they are so peculiar and striking, that they cannot possibly be mistaken, by any one who has a knowledge of auscultation, for any other sound, and leave no doubt about the existence of pregnancy. The morning sickness, suppression of the catamenia, the placental murmur, and all the other signs of pregnancy now described, may mislead us, but it is impossible, if we come properly prepared for the investigation, to mistake the sound of the fœtal heart, and if it be distinctly heard, the existence of pregnancy is established. But it must be admitted, although I am not prepared to explain the cause, that a few cases have occurred in which the pulsations of the fœtal heart could not be heard, or at least for a time be heard, though the uterus contained a living fœtus of six or even seven months. Where the fœtus is dead, the diagnosis of pregnancy, which is then so difficult, receives no aid from auscultation, and in all cases of doubtful pregnancy, unless you have devoted the greatest attention to obstetric auscultation, and even then, to prevent the possibility of error, internal exploration of the uterus should never be omitted. If the lips of the os uteri are smooth and hard, and the cervix is neither shortened nor the body enlarged, it is certain, whatever the symptoms may be, that pregnancy does not exist; it is of no consequence how closely they may have resembled the ordinary signs of pregnancy, the uterus is in the unimpregnated state. If, on the contrary, the lips are thick and soft, and the cervix shortened or obliterated, and the body of the uterus enlarged, and the passive movements or ballottement of the fœtus in the liquor amnii are distinctly felt when the finger is pushed against the anterior part of the cervix, pregnancy undoubtedly exists, whatever assertion be made to the contrary, and whether the fœtus be alive or dead. The left side, with the knees drawn up, is the best position for making this exploration; better, upon the whole, than the standing posture, with the back resting against the wall — that usually adopted by the French, in performing the *touchĕr*, as it is called. The point of the right forefinger should be introduced into the vagina, and pressed forward gently as far as possible to the anterior portion of the cervix of the uterus, that the fœtus may be felt within, through the anterior wall of the vagina and cervix. Some authors state that if the left hand be applied over the fundus uteri, while the finger is in contact with the cervix, you may then agitate the uterus alternately with the finger and hand, until the ballottement is discovered, and you are certain that the tumour in the hypogastrium is the same. I have seen labour immediately follow this agitation rudely performed, and if there is not a great quantity of liquor amnii, you may push many times with the finger in front of the neck, before you perceive the fœtus floating for an instant in the liquor amnii, and the next instant falling with perceptible weight on the point of the finger. But without feeling this floating and sinking, you may, by a careful examination, be absolutely certain that the uterus is enlarged, and contains a fœtus.

In the two latter months of pregnancy the umbilicus always protrudes above the surrounding surface. In a patient now under my care, at the end of the seventh month, the umbilicus is perfectly flat; and there are cases in which the navel projects very slightly even at a more advanced period; and there are others in which it becomes prominent at the end of the sixth month. I have never seen a case in which the navel was sunk in or depressed in the three latter months of pregnancy. The navel projects, it should be recollected, however, in all cases of ovarian cysts and tumours, as during pregnancy, and the silvery streaks or lines, called lineæ albicantes, also appear on the sides of the surface of the abdomen.

Great importance has always been justly attached, by the most eminent accoucheurs, to the condition of the areolæ and glands around the nipples, as a diagnostic sign of pregnancy. Dr. Hunter had great faith in this sign, insomuch that he asserted that he could always judge by it whether or not a woman was pregnant. He once evinced how much dependence was to be placed on it. A subject was brought to him for anatomical purposes, but on looking at the breast, from the appearance of the areola he declared that the female died while pregnant. One of his pupils examined the genitals, and found that she had a hymen; this seemed a contradiction, but the Doctor still adhered to his opinion, and thought more attention due to the former than the latter appearance. On opening the body his assertion proved just, for the uterus was found impregnated. "Obstructions and pregnancy are both accompanied," observes Smellie, "by a stretching fulness in the breasts; but in the last only (pregnancy) may be perceived the areola, or brown ring round the nipples, from which in the last months a thin serum distils; but this cuticle is not always discernible as in the first pregnancy, and even then is uncertain as well as the others." Dr. Denman placed less reliance on the areola, and believed that the changes in it might be produced by any cause capable of giving to the breasts a state resembling that which they are in at the time of pregnancy. "The areola, or brown circle around the nipples, has been represented as an indubitable mark of pregnancy. This is not, however, suspected to be a primary consequence of a particular affection of the uterus, but of the preceding enlargement and alteration of the breasts; and though it generally occurs in pregnancy, it may be produced by any cause capable of giving to the breasts a state resembling that which they are in at the time of pregnancy, and though generally, not universally, I think, in pregnant women." About thirteen years ago I examined a great number of patients at a public institution for lying-in women, with the view of ascertaining the appearances presented by the areolæ, at the different periods of pregnancy and subsequent to delivery. In many, during the early months, the changes in the areola were scarcely perceptible; and in some near the full period they were so slight, and the mammæ so little enlarged, that I should have believed, had the other ordinary symptoms of pregnancy been absent, that conception had not taken place. In other individuals the appearances presented by the areolæ were so striking that it was impossible for a moment to doubt the existence of pregnancy. I would recommend you carefully to examine the mammæ, the nipples, and glands and areolæ around them, in all cases where you suspect the existence of pregnancy, and see if milk can be pressed out of the nipples, but most cautiously to avoid forming or expressing your opinion upon any one case of doubtful pregnancy without taking a complete review of the whole of the symptoms which I have now described, of the order in which they have occurred, and of the value which each will bear after being rigorously scrutinized. Before proceeding to illustrate by examples the best mode of ascertaining whether pregnancy exists when concealed, complicated, or feigned, and how the diseases which resemble pregnancy may be distinguished from it, I shall show you Dr. Montgomery's series of drawings representing the changes in the breasts and their areolæ from the third month up to the time of delivery, and also read to you, from his valuable work on the Signs and Symptoms of Pregnancy, the account which he has given of the areolæ when completely developed. After quoting Rœderer's description, he says, at p. 59, "The several circumstances here enumerated at least ought, in all cases, to form distinct subjects for consideration, when we propose to avail ourselves of the condition as an indication of the existence or absence of pregnancy." Another also, equally constant, and deserving of particular attention, is a soft and moist state of the integument, which appears raised, and in a state of turgescence, giving one the idea that if touched by the point of the finger it would be found emphysematous: this state appears, however, to be caused by infiltration of the subjacent cellular tissue, which, together with its altered colour, gives us the idea of a part in which there is going forward a greater degree of vital action than is in operation around it; and we not unfrequently find that the little glandular follicles, or tubercles as they are called by Morgagni, are bedewed with a secretion sufficient to damp and colour the woman's inner dress. These changes do not take place immediately after conception, but occur in different persons after uncertain intervals: we must therefore consider, in the first place, the period of pregnancy at which we may expect to gain any useful information from the condition of the areola. I cannot say positively what may be the earliest period at which this change can be observed, but I have recognized it fully at the end of the second month, at which time the alteration in colour is by no means the circumstance most observable; but the puffy turgescence (though as yet slight) not alone of the nipple but of the whole surrounding disc, and the development of the little glandular follicles, are the objects to which we should principally direct our attention; the colour, at this period, being in general little more than a deeper shade of rose or flesh-colour, slightly tinged occasionally with a yellowish or light brownish hue.

During the progress of the next two months the changes in the areola are in general perfected, or nearly so, and then it presents the following characters: a circle around the nipple, whose colour varies in intensity according to the particular complexion of the individual, being usually much darker in persons with black hair, dark eyes, and sallow skin, than in those of fair hair, light-coloured eyes, and delicate complexion. The extent of this circle varies in diameter from an inch to an inch and a half, and increases, in most persons, as pregnancy advances, as does also the depth of colour. I have seen the areolæ, at the time of labour, almost black, and upwards of three inches in diameter, in a young woman of very dark hair and complexion; while in another instance its breadth around the base of the nipple did not, at any time of gestation, amount to a quarter of an inch, and at first was not more than an eighth; this circle, however, narrow as it was, was studded at nearly regular intervals with the glandular tubercles, which were not unlike a ring of beads. In negro women the areola becomes jet black, with somewhat of a purple shade through it."

LECTURE XVI.

CLINICAL ILLUSTRATIONS OF THE DIAGNOSTIC SYMPTOMS OF PREGNANCY; OF THE BEST METHOD OF ASCERTAINING THE EXISTENCE OF PREGNANCY WHEN CONCEALED, COMPLICATED, OR FEIGNED, AND OF DISTINGUISHING THOSE DISEASES FROM PREGNANCY WHICH OFTEN RESEMBLE IT.

Eighty-eight cases have come under my observation in the course of the last sixteen years, in which it became necessary to determine the existence of pregnancy. If you examine the tabular view which has been made of these cases, you will see that in about twenty the pregnancy was concealed; in twelve or fourteen complicated; in eight doubtful, but not concealed; and in two only, deliberately feigned. In all the remaining cases the symptoms did not depend upon pregnancy, but on some morbid state which resembled it, especially upon ovarian and uterine tumours, and on a disordered condition of the functions of menstruation and digestion. I propose in this lecture to illustrate by cases the observations which were made in the last lecture on the diagnostic symptoms of pregnancy, that you may be fully aware of all the difficulties and dangers you will have to encounter in the investigation of cases of doubtful pregnancy, and be enabled to avoid those mistakes, which, if committed, will not merely expose you to ridicule and contempt, but the honour and lives of innocent women to destruction.

I. — ILLUSTRATIONS OF CONCEALED PREGNANCY.

I. — On the 12th October, 1838, I was requested by Mr. Babington to see a young unmarried woman under his care in St. George's Hospital, who was reported to have been subject to epileptic fits, loss of power in the lower extremities, and retention of urine for two years. She had very recently left another public institution, where leeches had been frequently applied to the os uteri with a speculum. In passing the catheter, Mr. Babington discovered an undefined tumour in the hypogastrium, which he thought might be the gravid uterus. The catamenia had been suppressed for six months. When I examined the hypogastrium she tightened the abdominal muscles so strongly, that the uterus could not be felt distinctly. A slight placental murmur was heard on the left side of the hypogastrium, and a simple pulsation on the right side, corresponding with the arteries of the mother. The fœtal heart could not be heard. She reluctantly permitted me to make an internal examination, when I found the os uteri high up, more open than in the unimpregnated state, the lips tumid, the neck shortened, and the body enlarged. On the 8th November uterine contractions came on, and a dead fœtus of five months was expelled.

You may feel disposed to put the question, after hearing the history of this case, what is the earliest period when the existence of pregnancy can be certainly known? In some women who have enjoyed good health, and menstruated regularly before marriage, and who have soon after begun to suffer from morning sickness, and lost the catamenia, and in whom, on making an internal examination, the uterus has been felt enlarged, and the lips of the orifice thick and soft, I have been certain that pregnancy existed as early as the end of the second month. In the greater number of cases it is impossible, however, to be absolutely certain before the end of the fourth or middle of the fifth mouth; and even then, if the sound of the fœtal heart is not heard, and all the symptoms of pregnancy are not present, and have not occurred in the natural order, the greatest caution is required in delivering an opinion.

II. — A young unmarried lady, closely connected with a family of rank, had been for some time under the care of an eminent physician for suppression of the catamenia and a tumour of the hypogastrium, which, in spite of the treatment, went on slowly increasing in size. I was requested to examine the tumour, and to give an opinion respecting its nature, and especially to determine if it was connected with the ovaria. The patient being in bed, with the knees drawn up, and the abdomen only covered by the shift, I proceeded to examine the tumour, and from the sensation it communicated to the touch immediately suspected it to be the gravid uterus. By pressing the points of the fingers on the opposite sides of the abdomen firmly for a short time, the movements of the child were distinctly felt. This experiment was repeated several times, and invariably with the same result. I requested her mother to retire for an instant, and informed the patient of her true situation, and that exposure and disgrace would inevitably follow if she attempted longer to conceal it. At first she was in a desperate rage, but before I left the room burst into tears, and confessed that she had been misled. The unhappy occurrence was never, I believe, known to any of the members of her own family, except her mother.

III. — On the 8th of October, 1842, a medical gentleman called upon me, and stated that a woman about 30 years of age, of a spare habit of body, applied to him some days before, and said that she considered herself dropsical, and that some ladies in consequence had refused to take her into their service, suspecting she was pregnant. On the 6th October, Mr. —— saw her, and on examining felt a hard tumour in the lower part of the abdomen, reaching, however, as high as the navel. She had not menstruated for seven months. The stethoscope was applied to the left side of this enlargement, and the fœtal heart was distinctly heard, and Mr. —— on the strength of this did not hesitate to inform her that she was pregnant. The areolæ were dark, but not broad, and the breasts full. The pulsations of the uterine vessels were also heard. She said it was impossible that she could be pregnant, and her manner was so calm while assuring him that there was nothing of the sort, and that he must be wrong, that he was almost tempted to disbelieve his senses. An internal examination was not allowed. As she was living in a respectable family, and stood high in the opinion of a lady of rank, in whose service she had been, Mr. —— requested me to see her, with him, on the 8th of October. On applying the points of the fingers of my two hands firmly to the sides of the abdomen, I felt the movements of the child, but rather indistinctly. With the stethoscope I at once heard the pulsations of the fœtal heart, exactly 140 in the minute, on the left side. On the right the whizzing of the uterine vessels was equally distinct. The navel protruded. The areolæ were dark, but not broad. On examining internally, the lips of the os uteri were found remarkably thick and soft, the cervix shortened, and the body enlarged, and I could plainly feel the fœtus rolling about within the uterus when the finger was pushed against the anterior part of the cervix; the diagnosis was complete, yet she still persisted that she could not be pregnant, and that we were both completely mistaken. She made no confession, but disappeared soon after to save her reputation, and was delivered privately in three weeks.

IV. — A medical practitioner consulted me about a woman, a housekeeper in a gentleman's family, who had a swelling of the abdomen, which he thought fluctuated and was dropsical: I believe he had little or no suspicion of pregnancy. On pressing the points of my fingers firmly against the sides of the abdomen, the movements of the child were distinctly felt; the areolæ and glands were fully developed; the cervix uteri was lost, and the ballottement was distinct. The os uteri was indeed so open, that I felt the head presenting. This woman, who maintained that she could not be pregnant, was privately married to the butler, and was delivered in thirty hours of a full-grown child, after I had made the examination.

V. — I was called in the middle of the night to see a young woman, residing in a great mansion, who had suddenly been seized with violent periodical pains in the abdomen, which were supposed for some hours to be spasmodic. No suspicion of pregnancy had been entertained by any one, but when I applied my hand over the abdomen during a pain, the gravid uterus was felt contracting distinctly, and I contrived, as she was in bed undressed, to see the mammæ, and observed the nipples surrounded by broad dark areolæ. After removing every person from the apartment, I informed her that she was pregnant and in labour, but she denied this in the most solemn manner. On making the proper internal examination, the nates of the child were found pressing upon the external parts, and in less than an hour she was delivered of a fine living boy. Even when the child was put in her arms, she persisted in denying the possiblity of pregnancy, and refused to acknowledge that the child was hers.

VII. — On the 19th November, 1839, Mr. Balderson called me to see a young unmarried woman, who had been under his care for some months, with swelling, and great varicose veins, of the right inferior extremity. He observed that the patient's abdomen was enlarged, but for some time his suspicions of pregnancy mere removed by the most positive assurance that menstruation was perfectly regular, which he afterwards discovered to be untrue. I found the abdomen swollen, the umbilicus protruding, and the sides of the belly covered with white lines. The fingers were pressed against the sides, but no movement was felt. The instant the stethoscope was applied between the umbilicus and left ilium, the sound of the uterine vessels, exactly resembling the drone of a bag-pipe, as described by some writers, was heard, but the sound of the fœtal heart could not be perceived; the areolæ were broad and dark, and the glands enlarged. By an internal examination it was ascertained that the lips of the os uteri were thick and soft, the cervix shortened, the body enlarged, and that the uterus contained a fœtus near the full period. She confessed next day that she was pregnant, and the labour took place in due time.

VIII. — In January, 1840, a young woman came to consult me for varicose veins of the lower extremities, which had only existed for a few months. The catamenia had been suppressed for six months, and there was an evident enlargement of the abdomen. The sound of the fœtal heart and uterine vessels left no doubt about the nature of the case, without an internal examination, and she immediately admitted that she was previously aware of her condition.

IX. — On the 20th September, 1839, I saw a young woman in the surgical wards of St. George's Hospital, who was in the sixth or seventh month of pregnancy. She was admitted on account of varicose veins of the legs, and Mr. Robert Brown suspected pregnancy from the state of the veins. Another case of concealed pregnancy was in the hospital, and the pregnancy was likewise discovered by the swollen state of the veins of the legs.

X. — On March 12th 1828, I was called to an unmarried lady, whose abdomen had been slowly enlarging for several months. No suspicion having been entertained by her medical attendant that she was pregnant, mercury, diuretics, and the strongest cathartics, had been given to remove the supposed dropsy, and tapping proposed. When I examined the abdomen, the fluctuation was as distinct as in any case of ascites, and the right lower extremity was œdematous. Having received a hint from the nurse that pregnancy was possible, I made an internal examination, and found the os uteri considerably dilated, and the membranes protruding; the labour had actually commenced.

Several cases similar to the preceding have been related to me, in which tapping was performed. One young unmarried woman, who must have been aware of her situation, allowed the surgeon actually to push the trochar into the uterus. She recovered even after this operation, and had given birth to twins, which were dead.

IX. — On the 27th December, 1832, I saw a married woman in St. George's Hospital, who was pregnant, and very near the time of her confinement. The os uteri was slightly open, so that I could not only feel the membranes but the head of the fœtus presenting. The areolæ were dark, and the glands around the nipples enlarged. The movements of the fœtus could not be felt by pressing against the sides of the uterus, and neither the uterine sound nor fœtal heart was distinctly heard. The abdomen of this woman was covered with the marks of great numbers of leech-bites. She had for several months been treated at a public institution for ovarian dropsy, and fortunately escaped being tapped.

II. — ILLUSTRATIONS OF COMPLICATED PREGNANCY.

XII. — In April, 1840, I was requested by Dr. James Johnson to see a patient who had a malignant fungoid disease of the os uteri. The catamenia had disappeared for several months, and she had morning sickness, and other symptoms, which made her believe she was pregnant. In May, the abdomen had enlarged, and the sound of the pulsations of the fœtal heart and uterine arteries were distinctly heard, and the movements of the fœtus felt with the hand. The areolæ were broad and dark, and the glands around the nipples enlarged.

XIII. — Several years ago, a woman with malignant disease of the os uteri, and who was three or four months pregnant, was admitted into St. George's Hospital. I believe she left the hospital before quickening had taken place, and before the sound of the fœtal heart was heard, or the existence of pregnancy ascertained positively.

XIV. — On the 19th of June, 1839, I was requested to see a patient who had been six weeks in the St. Marylebone Infirmary, insane, and who was suspected, from the size of the abdomen, to be far advanced in pregnancy. Auscultation had been employed at different times, but neither the sound of the fœtal heart, nor of the bloodvessels of the uterus, were heard. There was no history to guide us in this case, as she had been brought into the infirmary in a state of insensibility. The mammæ and the veins were large, the glands around the nipple very remarkably small, and the areolæ, though somewhat darker than usual, were not half the breadth observed in some cases of pregnancy. The umbilicus did not protrude. A large tumour filled the greater part of the abdomen, which emitted a dull sound on percussion, and yielded a very unequal resistance on pressure. The fingers were pressed firmly on the sides of the abdomen, but no movement was felt. On applying the stethoscope a little on the left side of the umbilicus, I heard the fœtal heart pulsating at the rate of 140 in the minute. No placental murmur could be heard after exploring every part of the uterus. I made an internal examination, and from the enormously distended state of the rectum had great difficulty in reaching the os uteri, the lips of which were soft and tumid, and I could not be sure whether the cervix was much shortened, and nothing like ballottement of the fœtus could be felt, or the existence of a fœtus within the uterus by this means ascertained. The veins of the lower extremities were not varicose. In a few days labour came on, and was happily completed, but she died afterwards from disease of the brain. Without auscultation it would have been impossible in this case to discover the truth.

XV. — A lady who had been married nineteen years without becoming pregnant, fell with child in the twentieth year, and the fœtus died from disease of the placenta in the fifth month. The abdomen ceased to enlarge, the movements of the fœtus to be felt, and a thin sanguineous discharge took place from the uterus. The mammæ were increased in size, and dark areolæ formed around the nipples. The uterus was felt enlarged, and reaching near to the umbilicus, but no movements could be felt by pressing the uterus, and I could not hear the sound either of the fœtal heart or uterine vessels. By an internal examination I ascertained that the lips of the os uteri were thick and soft, the neck somewhat shortened, and the body enlarged, and that there was something moveable contained within the cavity. I had no doubt that the symptoms arose from pregnancy, and that the fœtus was dead. This lady had consulted a variety of practitioners, who formed different opinions about the case. In the sixth month labour came on, and a dead fœtus, with a morbid placenta, was expelled, and she has since had several healthy living children.

I have met with other three instances similar to the preceding, in which the fœtus died soon after the fifth month, and in no cases of pregnancy is the diagnosis, perhaps, more difficult, except in uterine hydatids. In one of these cases the uterus was supposed by the practitioner to be a malignant enlargement of the ovary, and I had great difficulty in ascertaining the truth, as most of the usual symptoms of pregnancy were wanting, and auscultation afforded no assistance. The areolæ around the nipples, and the soft state of the os uteri, and enlargement of its body, enabled me to ascertain that all the symptoms depended upon pregnancy. In the other two cases, after the most careful investigation, I remained uncertain about the cause of the symptoms, till the uterus contracted and expelled its contents. In one of these I was strongly inclined to think that the symptoms were incompatible with pregnancy.

XVI. — A lady, under the care of Dr. Stodart, became pregnant, and had suppression of the catamenia, and morning sickness, for four months. Irregular discharges of blood took place from the uterus, which continued for nearly two months, and no enlargement of the abdomen was observed, nor symptom of quickening. In the seventh month the mammæ were enlarged, and the areolæ and glands around the nipples were extremely distinct, and milk was secreted. It was ascertained by an internal examination that the body of the uterus was somewhat enlarged, the cervix shortened, and the lips thick and soft, and the orifice slightly open. In the abdomen there was nothing felt like the gravid uterus, and but for the appearances in the mammæ I should have felt disposed to attribute the symptoms to some other cause than pregnancy. At the end of nine months precisely from the disappearance of the menses, discharges of blood having occurred repeatedly at intervals, the uterus contracted, and expelled a morbid ovum of three months, with great hemorrhage.

At one time I thought milk was never secreted without pregnancy, but I have lately seen a patient, with Mr. Balderson, and another with Mr. Wilson, from whose nipples a fluid having all the appearances of milk could be easily pressed out, though they were not pregnant, and had never been so.

XVII. — A married woman, aged 44, suddenly ceased to menstruate, in November, 1839, and soon after began to suffer from constant sickness and vomiting. In December a sanguineous discharge took place from the uterus, and a tumour appeared in the hypogastrium, which continued to enlarge till her admission into St. George's Hospital, where I first saw her on January 31, 1840. A soft tumour, the size of a cricket-ball, and not painful on pressure, filled the brim of the pelvis and hypogastrium, which, if not the uterus, was intimately connected with it. No sound of any kind was heard in this tumour, and it did not communicate the usual sensation to the touch of the gravid uterus. The os uteri was open so as to admit the finger, and the lips were soft and irregular. There was a constant and profuse discharge of blood. The areolæ threw no light on the case, and I was unable to determine the cause of the enlargement of the uterus, or be absolutely certain that it was the uterus which was enlarged, and explain the symptoms. On the 15th of February, the tumour having diminished in size, and also the discharge, pains came on, and a mass of serous cysts or hydatids, as they are called, was expelled.

The diagnosis is even more difficult in cases of this description than in cases of pregnancy where the fœtus dies about the middle period of pregnancy. In a case which recently came under my care, I felt certain that the uterus in the sixth month was distended with serous cysts before any escaped, and gave ergot with the happiest result. The morning sickness had been experienced, and all the other symptoms, for three months: the uterus then enlarged; profuse hemorrhage followed; the areolæ and glands were developed; and the uterus rose up into the hypogastrium. By an internal examination, though no fœtus was felt, the thick, soft, dilated state of the orifice, shortened state of the cervix, and enlarged condition of the body, were the circumstances observed in the patient on which the diagnosis was founded.

III. — ILLUSTRATIONS OF THE DISEASES WHICH RESEMBLE PREGNANCY.

XVIII.— In December, 1841, I saw, in consultation, a married lady suffering from peritonitis, after exposure to cold during menstruation. She recovered, but at the end of January, 1842, the abdomen was larger than natural, and there were irregular attacks of pain. In March she informed me that she was pregnant, but the pain she occasionally endured was almost unbearable; that the belly was rapidly increasing in size, and that a serous and bloody discharge had taken place from the vagina, which lasted seven days, and that she suspected she was about to miscarry. On the 14th of March I found the hypogastrium occupied by two distinct lobulated tumours, very painful on pressure. No movement was felt on pressure, and no sound heard in these to indicate that pregnancy existed. Internally the hollow of the sacrum was completely blocked up with a great mass, fixed to the sides of the pelvis, which I ascertained to be the lower part of the tumours in the hypogastrium. The os uteri, in the unimpregnated state, was forced up behind the symphysis pubis, so as to be almost beyond the reach of the finger. I ordered leeches to the hypogastrium, and perfect rest for some days, that I might still more completely investigate the case, before giving an opinion. Having done so three times, at intervals of several days, and being satisfied about the nature of the affection, I communicated to the husband my doubts about the existence of pregnancy, and suggested the propriety of calling into consultation an eminent practitioner, to be quite sure that I was not wrong. This was done, and after another complete examination of all the symptoms, no doubt was left that extensive ovarian disease existed, without pregnancy. She retired into the country, and being one night in acute pain, a surgeon of great experience and ability was requested to see her. The following day her husband called upon me with a smiling countenance to say that his wife was pregnant, that premature labour was about to take place, and he very politely advised me to be still more cautious in future how I ventured to give a decided opinion in such cases. No labour, however, followed: the tumour increased with great rapidity, and in less than a month, retention of urine, and constant vomiting, took place, which proved fatal, in the manner malignant ovarian tumours usually do.

I might relate a number of cases very similar to the preceding, but this is perhaps sufficient to illustrate the subject, and to prove that when a large ovary is mistaken for pregnancy, the error is not "a harmless one."

XIX.— A young woman, who resided in a famly at Bayswater, was attacked with tuberculated disease of the peritoneum and omentum. The abdomen enlarged so much that pregnancy was suspected, and the medical attendant of the family was requested to see her, and ascertain if such was the case. He reported that she was in an advanced stage of pregnancy, and consequently she was compelled immediately to quit her situation in disgrace. She obtained by some means a letter of admission into St. George's Hospital, where I was requested to see her, to ascertain if the enlargement of the abdomen arose from pregnancy. The abdomen was as large as it usually is at the commencement of the ninth month; there were white lines on its sides, and the navel protruded. No movements were felt indicative of pregnancy, nor sound heard by auscultation. The mammæ were shrunk, and there were no areolæ. The uterus was found on examination to be pressed down close to the outlet of the pelvis by a great mass of disease above, which I thought was probably ovarian. Even after this examination I was requested a second time to look at the case, and be sure that there was no mistake. The diagnosis was correct, and she died in the midst of great agony in the course of a few weeks. There were immense masses of tuberculated accretions found occupying the whole sac of the peritoneum and omentum.

XX. — In 1841, I saw, in consultation, a married woman who was supposed to be not only pregnant, but in labour at the full period. The uterus was in the unimpregnated state, and the enlargement of the abdomen and pain arose from hypertrophy and inflammation of the liver.

XXI. — A respectable woman, about the age of forty, who had long been married, and was barren, after suffering for many months from symptoms of indigestion, perceived the abdomen to enlarge, and thought she felt the movements of the child most distinctly within it. She was anxious for a family, and flattered herself that she was pregnant, though menstruation continued regular. She consulted a practitioner residing in her neighbourhood, who declared, after employing the stethoscope, that she was near the full period of pregnancy, and that the child was alive, as he could hear its heart beating. Six weeks passed away, but no sign of labour was observed, and the abdomen began to diminish somewhat in size. Four months passed away, yet she could not wholly abandon the belief that she was pregnant, as she still felt the movements; and she then requested me to examine, and say whether she was so or not. The abdomen was greatly distended, and the whole resounded on percussion like a drum. Nothing was heard on the application of the stethoscope, except a quantity of gaseous fluid moving about in the bowels, which had been mistaken for the pulsations of the fœtal heart. The uterus was found low down in the pelvis, and in the unimpregnated state.

XXII. — I was requested to see a young unmarried woman in

St. George's Hospital, some years ago, under the care of Dr. Seymour, who had suppression of the catamenia, violent fits of hysteria, and whose abdomen was as large as at the full period of pregnancy. The whole belly on being struck emitted so clear a sound that I decided there was no pregnancy, without exposing the patient to an internal examination, of which she had a great horror. A second time pregnancy being suspected in this patient, I made an internal examination, and found the uterus in an unimpregnated state. I believe the case underwent a third investigation, that there might be no mistake, and with the same result. I have seen several other cases of hysterical tympanites simulating pregnancy.

XXIII. — In September, 1841, a lady, who was very anxious to have a family, thought she was seven months pregnant, and sent to engage me to attend her in her confinement. When I called upon her, she informed me that she continued perfectly regular at the monthly periods, which led me to suspect that pregnancy did not exist. Having heard of several ladies who continued regular during pregnancy, she thought this was of no importance. I found the abdomen large, soft, and puffy, and that no part of it emitted a dull sound, like the gravid uterus. Neither the uterine vessels nor fœtal heart were audible, and there was no movement felt, though she maintained that the child often moved with great activity within her. The areolæ were large and dark, and the glands enlarged. The uterus was in the unimpregnated state, and she was deeply disappointed when informed that she was not pregnant; and for some months, I believe, still cherished the hope that she was so. The symptoms disappeared in some months by the use of cathartics and tonics, and pregnancy afterwards took place.

XXIV. — On the 14th of March, 1842, I saw a lady, æt. 44, who had been married fourteen years, and had always continued to menstruate regularly till the preceding August, when the catamenia disappeared. Soon after, she began to suffer a great deal from pain in the hypogastrium, lower part of the back, irritation of the bladder, and sickness in the morning. Three months after the abdomen begun to enlarge, and it went on slowly increasing till March, and movements, like those of a child, were felt at different times so strongly, that she had no doubt but pregnancy existed. The abdomen was large and soft, and resounded every where on percussion. The uterus was in the unimpregnated state, and the symptoms disappeared in a few months by proper medicine and diet.

Dr. Gooch has given a description of similar cases. "The next class of cases," he says, "which I shall describe, consists in a torpid state of the uterus, with a flatulent state of the intestines: this is most liable to occur near fifty years of age, when the uterus is about discontinuing its function. At this time menstruation will often cease for several months, and the abdomen becomes distended with a flatulent tumour: the air moving about the bowels gives an inward sensation, which is mistaken for the child; there is often slight nausea, various nervous feelings, and an anxiety to believe in pregnancy as a test of youthfulness. About this age also the omentum and parietes of the abdomen often grow very fat, forming what Dr. Baillie once called 'a double chin in the belly.' This assemblage of symptoms at this age frequently leads to the supposition of pregnancy; but I have met with many similar cases in young women. I have repeatedly known those who, on the return of their husbands after a long absence, have suddenly ceased to menstruate, and grow large about the belly, conclude that they were pregnant, and make preparations for their confinement. I have known the same thing to happen to single women, who had been secretly incurring the risk of pregnancy: they were generally women of sickly constitutions, who were very subject to obstructed menstruation; and it is probable that in these the puzzling assemblage of symptoms was the result rather of mental agitation than of sexual intercourse."

XXV. — I was called in the middle of the night some years ago to deliver a woman, in whom it was supposed by the medical attendant that the arm of the child presented. When I went into her apartment she was uttering a loud noise, as if the child had actually been passing into the world. On making an internal examination, I was astonished to find the os and cervix uteri in an unimpregnated state. I immediately took my leave, after stating the fact, and subsequently learned that she had feigned pregnancy, for the purpose of inducing a gentleman to marry her, with whom she had been cohabiting for some time. A speedy separation followed this discovery. In another case of this description, but less flagrant, the patient had the power of throwing the abdominal muscles into a state of rapid contraction and relaxation, so as to produce movements like those of a fœtus. She consulted various practitioners, but I never heard that any were imposed upon by this trick.

Queen Mary's case, as related by Hume, affords an excellent example of incipient dropsy mistaken for pregnancy. "The Queen's extreme desire of having issue had made her fondly give credit to any appearance of pregnancy; and when the legate was introduced to her, she fancied that she felt the embryo stir in her womb. Her flatterers compared this motion of the infant to that of John the Baptist, who leaped in his mother's belly at the salutation of the Virgin. Despatches were immediately sent to inform foreign courts of this event; orders were issued to give public thanks; great rejoicings were made; the family of the young prince was already settled, for the Catholics held themselves assured that the child was to be a male; and Bonner, Bishop of London, made public prayers, he said, that heaven would please to render him beautiful, vigorous, and witty. But the nation still remained somewhat incredulous; and men were persuaded that the Queen laboured under infirmities which rendered her incapable of having children. This infant proved only the commencement of a dropsy, which the disordered state of her health had brought upon her."

A woman who is condemned to suffer death for some crime may plead pregnancy in bar of execution. A widow may feign to be with child for the purpose of defrauding the lawful heir. The laws of the country applicable to such cases will be explained in the lectures on Medical Jurisprudence.

LECTURE XVII.

ON THE DISEASES OF PREGNANT WOMEN—EXTRA-UTERINE GESTATION AND ABORTION.

Conception sometimes takes place, but the impregnated ovum is arrested in its progress to the uterus; or, having reached the cavity of the uterus, it is liable from a great variety of causes to be expelled prematurely, with pain and hemorrhage. The first of these accidents is called extra-uterine gestation, the second abortion; and I shall consider their causes, symptoms, and treatment, before describing the other morbid states of the gravid uterus, and those affections of the brain, and of the thoracic and abdominal viscera, which occur during pregnancy, and which depend entirely upon the sympathy which exists between the gravid uterus and all the remote organs of the body, through the great sympathetic and spinal nerves. The general nervous and vascular excitement so often observed in pregnant women, is evidently referrible to the immensely rapid development of the ganglionic nervous system of the uterus. The local and constitutional diseases of pregnancy demand peculiar attention, because they not only excite great suffering and danger at the time of their occurrence, but they often injuriously affect the whole process of parturition, and retard the recovery in the puerperal state. Some of the fatal accidents which have occurred during labour, especially convulsions and hemorrhage, might have been foreseen and prevented by proper treatment in the latter months of pregnancy. It is well known that the danger is far greater in the first pregnancy and labour than in subsequent confinements; it is therefore our duty to see those patients occasionally who entrust themselves to our care, whether they be rich or poor, before the commencement of labour, and furnish them with clear instructions respecting their mode of life. Great mischief may often be prevented by inculcating upon them strongly the importance of mental tranquillity, regular and gentle exercise in the open air, early rising, simple diet, and the occasional use of mild cathartics.

EXTRA-UTERINE GESTATION.

In 1650, Riolan published the history of a case in which the impregnated ovum was retained in the fallopian tube, which suddenly burst at an early period of pregnancy, and death was produced by the extravasation of a large quantity of blood into the peritoneal sac. Many cases similar to this have since been recorded, and the greater number have terminated fatally from internal hemorrhage, a few hours after the rupture of the tube. In 1830, I saw three examples of tubal gestation, in all of which death speedily ensued from the same cause. The usual symptoms of early pregnancy had been observed in all of them; and before the occurrence of acute pain in the region of the uterus, followed by faintness, coldness of the extremities, hurried respiration, and death, there was no ground for suspecting that the ovum was not contained within the uterus. In a case which occurred in 1836, and terminated fatally about the end of the third month, besides the ordinary signs of pregnancy, the patient suffered severely for some weeks with symptoms of inflammation and retroversion of the uterus. You have already seen this specimen of tubal gestation, and another which was removed from the body of a lady who died suddenly in 1829. In neither is there a deciduous membrane lining the uterus. The opening in the coats of the tube, generally, I believe, corresponds with the part where the placenta is attached; and as the bloodvessels of the tube laid open are very large, and the coats have no power of contraction similar to those of the uterus during labour, the blood continues to flow from the exposed vessels, until syncope, and the other consequences of profuse internal hemorrhage, take place. The tubes admit of dilatation to a certain extent in all cases, without laceration; and in some which have been recorded they have actually expanded sufficiently to contain the fœtus and its involucra at the end of the ninth month.

In a few rare cases the ovum has made its way from the canal of the fallopian tube into the muscular coat of the uterus. M. Breschet has collected together all the examples of this variety of extra-uterine gestation, which is usually called the interstitial. The ovum does not in these cases lie under the peritoneal coat of the uterus, or between the muscular coat and lining membrane, but between the layers of the muscular fibres. Five times out of seven it has been found on the left side, either above, behind, or below the entrance of the fallopian tube into the uterus, which in no case had a communication with the cavity in which the ovum was contained. The symptoms and termination of these cases have been similar to cases of tubal gestation.

In about one-half of all the cases of extra-uterine gestation which have been published, the ovum had not entered the fallopian tube, but had become attached to the ovarium, or some of the abdominal viscera. The embryo has usually, in these instances of ventral gestation, been found contained in a vascular cyst, with a placenta and funis as in ordinary pregnancy. Except some peculiarly distressing symptoms experienced by the mother during pregnancy, nothing unusual has been observed till the end of the ninth month, when pains like those of labour have come on, and the movements of the fœtus have gradually ceased. In some cases, before the end of the ninth month the fœtus has died, and the uterus has shown no disposition to contract, as in labour. The death of the mother may take place from inflammation of the parts around the dead fœtus, or she may recover after the bones have escaped, or been extracted through an opening in the abdominal parietes, or in the coats of the rectum or bladder; or the fœtus may be retained in the abdomen for many years. The cyst which contains the fœtus usually contracts adhesions with the abdominal parietes, and an effort is made by nature to expel the dead fœtus through an ulcerated opening. In the treatment of these cases the best plan is to subdue the inflammation by leeches and other means, and when the bones approach the surface, to make an opening through the abdominal parietes, or to enlarge the natural opening of these, and extract the bones like any other foreign bodies lodged in the abdomen. Even if the diagnosis in these cases of ventral gestation were more perfect than it is, I do not think we would be justified in performing the operation of gastrotomy with the view of extracting the child alive. The following case, which is the last I have seen of this sort, may serve to illustrate the difficulty of the diagnosis, and the impossibility of rendering any assistance by art where no effort is made by nature to establish an opening in the abdominal parietes through which the fœtus may escape. A woman, æt. 35, who had been married thirteen years, and had never been pregnant, ceased to menstruate in July, 1840, and soon after began to have all the symptoms of pregnancy. In November, the abdomen, which had previously enlarged, diminished somewhat in size, and at the end of March, 1841, she had violent pains like those of labour, with a thin, red-coloured discharge from the vagina. I saw her with Mr. Pickering, of Hammersmith, on the 24th April, 1841. The areolæ were then broad and dark, and milk could readily be pressed out of both nipples, but the glands were not enlarged. A hard, irregular tumour occupied the hypogastrium; but on the left side it was soft, and an obscure fluctuation was felt in this portion of it. The umbilicus was very little protruded, and there were no white lines on the sides of the abdomen. No movements of a fœtus were felt, nor any sound heard. The cavity of the pelvis was occupied by a hard, immoveable mass, and the os uteri was forced up by this behind the symphysis pubis so high that it could scarcely be touched. The condition of the mammæ, and the sudden suppression of the catamenia in July, 1840, without previous bad health, or obvious cause, made it probable that conception had then taken place, though some of the symptoms of pregnancy were absent. She died in December, 1841; and on opening the abdomen we found a large mass, like the gravid uterus in the seventh month, occupying the whole of the hypogastrium. The intestines and omentum firmly adhered to the upper part of the tumour, which felt hard in some parts, and fluctuated in others. On opening this thick cyst a great quantity of fluid, like thin pus, escaped, and a perfect fœtus of six months, with its umbilical cord and placenta. The cyst adhered to the whole of the posterior and upper surface of the uterus, which was larger than natural, and the cervix was considerably lengthened. The walls of the uterus were healthy, and the cavity empty. How the cyst was formed I could not ascertain, nor its precise structure. It adhered so firmly to all the parts around, and they were so much disorganized by inflammation, that the ovaria and tubes could not be distinctly seen in the confused mass, and I was unable to determine whether it was a case of ventral or tubal gestation.

THE CAUSES, SYMPTOMS, AND TREATMENT OF ABORTION.

The ordinary term of utero-gestation is forty weeks, or two hundred and eighty days; but the contents of the gravid uterus are often expelled before the completion of the natural period, when the organs of the fœtus have not been sufficiently developed to enable it to support an independent existence. The expulsion of an ovum from the uterus before the end of the sixth month, whether the fœtus be alive or dead, is usually called abortion or miscarriage. When delivery does not take place till the seventh month, but before the end of the ninth month, the child being then capable of sustaining life, the process is called premature labour. There is no proper distinction between these, and it would perhaps be more correct to say that abortion took place whenever the contents of the uterus were prematurely expelled. Abortion is a frequent occurrence in the early and latter months of pregnancy, among women in all ranks of society. In the higher and middle classes, it is, I believe, fully as frequent an occurrence as in females of the lower orders, who are much exposed to bodily fatigue and mental anxiety. The causes of the accident are numerous, and often extremely obscure. They have been arranged under two heads: those which depend upon the parent, — on some local or constitutional disease in the mother, or on some morbid condition of the ovum, or in the contents of the gravid uterus.

All the organic diseases of the uterus may be considered causes of abortion. When the uterus is affected with cancer, or fibro-cartilaginous tumours grow in its parietes, the enlargement of the organ cannot take place during pregnancy in the usual manner, and it contracts prematurely, and expels its contents; it admits of a certain, but not of the requisite degree of development. Abortion is often one of the first symptoms of malignant disease of the uterus; and women who have in the walls of the uterus a number of fibrous tumours imbedded, as in *this preparation*, never carry their children till the full period; it cannot possibly expand so as to contain a fœtus at the end of pregnancy. Tumours and cysts of the ovaria or broad ligaments, and morbid adhesions of the uterus and its appendages to the surrounding parts and sides of the pelvis, produce the same effect, by preventing that free expansion of the organ which is requisite during the growth of the fœtus. A rigid, unyielding state of the parietes of the uterus, too great sensibility and contractility of its fibres, feebleness and relaxation of the cervix, or atony of the whole organ, either from original constitution or long-continued leucorrhœa, immoderate heat of the uterus from an excited state of the nerves, and a chronic inflammatory or irritative state of its vessels, have all been admitted by the most recent authors to be frequent causes of abortion, though I think on very insufficient grounds; indeed, there is no evidence to prove that such states of the uterus ever exist during pregnancy, to produce abortion or any other morbid symptom. So far from the parietes of the uterus being in a rigid, unyielding state during pregnancy, it is known that one of the first effects of conception is to render them unusually soft and vascular, and the layers of muscular fibres easily separated from one another.

When pregnant women are affected with typhous fever, scarlatina, measles, small-pox, and other acute febrile diseases, abortion not unfrequently ensues. It is difficult to determine whether this arises from the deleterious matter which enters the system of the mother passing into the fœtus and destroying its life, or from the increased determination of blood which takes place into the vessels of the uterus, and the consequent detachment of the placenta. Many pregnant women affected with small-pox die in an early stage from uterine hemorrhage, which no remedies can control. Dr. Gregory has informed me that he has seen, at the Small-Pox Hospital, many female patients die in this manner; syphilis and mercury probably both act as specific poisons upon the fœtus in utero, and directly destroy its vitality. Abortion has sometimes speedily followed the application of external violence, as the extraction of a tooth, or pressure of the hypogastrium, violent exercise, driving along a rough road in a carriage without springs, dancing, the employment of the warm bath, and the administration of acrid cathartics and strong emetics. Abortion has also frequently followed strong mental emotion, especially joy and fear, and violent nervous shocks of every description. Most of these causes probably act either by producing a great flow of blood to the uterus, or by irritating its nervous system, and causing the muscular fibres to contract and expel the ovum. There are some constitutional diseases in one or both of the parents, the nature of which it is difficult or impossible to determine, which have no decided connection with syphilis, and yet produce repeated abortion by destroying the life of the fœtus.

But by far the most frequent cause of the accident is a morbid condition of the ovum itself, by which the embryo perishes, and is expelled from the uterus like a polypus, the placenta, or any other foreign body. The ovum becomes blighted, or deprived of life, in consequence of the presence of some organic disease in the embryo, or its envelopes, and when dead it is usually thrown off by the uterus before the full period. This is the cause of habitual abortion in the greatest number of cases, some disease of the ovum taking place about the same period in successive pregnancies. The expression in common use, the habit of aborting, has no signification, and affords no explanation of the cause of the first abortion, or in what manner the habit came to be formed. When the embryo and involucra are healthy, they are not easily detached from the uterus; but when affected with disease, the most trifling mental emotion, or physical shock, is sufficient to rouse the uterus into action, and to excite it to expel its morbid contents. The real cause of the accident is most frequently overlooked; every thing may have been apparently going on favourably, and the occurrence is attributed to some circumstance wholly inadequate to produce so powerful an effect. Pregnant women have had the bones of the extremities fractured, and have suffered other grievous bodily injuries, without miscarrying; and there can be no doubt that criminal attempts to procure abortion are often made unsuccessfully in consequence of the difficulty which is experienced in detaching a healthy living ovum from the uterus. Mauriceau relates the history of a woman who escaped by a window from the third floor of her house when on fire, and in her fall to the ground fractured her arm, yet abortion did not follow. The case of a young woman is related by Madame Lachapelle, who threw herself into a deep pit, and suffered injuries of which she subsequently died; yet the fœtus was not expelled. In several cases of distortion of the pelvis — in one which has occurred within the last few weeks at the end of the fifth month, and in another still earlier — I passed up into the uterus this probe-pointed silver catheter, and detached the membranes of the ovum entirely from the lower part of the uterus, yet uterine contractions and abortion did not follow, until the same instrument was re-introduced and the membranes perforated. Perforation of the membranes is invariably followed, in no long time, by the expulsion of the uterine contents.

The pathology of the human ovum has engaged the attention of the greater number of accoucheurs from Mauriceau to the present time, and their writings contain examples of nearly all the diseases which affect the contents of the gravid uterus at the different periods of pregnancy. There is now before you on the table a large collection of morbid ova which were expelled in abortion before the end of the third month of pregnancy, and by examining these in detail you will soon become acquainted with all the changes of structure to which the membranes, placenta, vesicula umbilicalis, funis, and embryo, are liable. The most common morbid appearances in these ova are the following: — atrophy of the vesicula umbilicalis, thickening and induration of the placental and uterine and reflected decidua, and obliteration or obstruction of their venous canals; hypertrophy of the placenta and villi of the chorion, deposits of coagula of maternal blood in the cavernous structure of the placenta and of the chorion, which have taken place at different periods, have become in some parts white or yellow, extremely dense, and seem at first sight organized, though not really so. In some of these ova the placenta and villi of the chorion are greatly developed, and their cavernous structure completely distended with hard masses of coagulated blood. The obstruction in the veins of the placental and uterine decidua has probably been the cause in most of them of the obstructed circulation and coagulation of the maternal blood in their cavernous structure, producing what has appropriately been termed placental apoplexy, or apoplexy of the ovum. When you cut through the walls of these ova, you see nothing between the thickened decidua and chorion, but these hard irregular masses of coagulated blood, which often cause the membrane of the chorion to present a number of smooth projections inward upon the amnion. The amnion in most of them is perfect, but there is frequently no embryo contained within the amnion, and sometimes no umbilical cord. Oftener there is an umbilical cord of unusual length, and tightly twisted, with a few irregular tufts at its extremity, in place of an embryo. These large morbid ova constitute what some of the older authors, and also some of the more recent writers on abortion, have called moles, and which have been supposed to be formed sometimes in the uterus without conception, and to be unorganized masses. In some women these changes of structure are always observed in the ova expelled in repeated abortions, and it is often difficult or impossible to explain their cause, if it cannot be referred to constitutional diseases of the parents. I believe inflammation is rarely if ever the cause of the thickening of the membranes of the ovum, and especially of the decidua, and I am now disposed to think that the morbid alterations of structure in the placenta, observed at a more advanced period of gestation, which have been attributed by pathologists to inflammation, depend upon other causes, and that inflammation, as observed in other organs, is seldom met with in any part of the human ovum, either in the early or later periods of pregnancy.

In several of the morbid ova before you, the great capacity of the amnion makes it probable that the liquor amnii before the end of the second month had been secreted in a much larger quantity than usual, and that dropsy of the amnion was the cause of their premature expulsion. In *this ovum* of three months there was a considerable quantity of fluid, like liquor amnii, between the amnion and chorion, and in others a large clot of blood has occupied the same situation between these membranes. At a later period, the presence of an excessive quantity of liquor amnii, and the over-distension of the uterus, most frequently excites premature contractions.

But there is another remarkable disease peculiar to the human ovum, which sometimes commences at an early period of pregnancy, and is almost invariably followed by the destruction of the embryo, and abortion. This disease has been known from the earliest periods, and has been described under various names: as the vesicular mole, hydatic mole, hydrometra hydatica, uterine hydatids, and serous cysts of the placenta. There are several specimens of this curious disease upon the table, from which you will be able to trace its progress from the commencement in a few small cysts in the placenta and villi of the chorion, to the complete transformation of the ovum into a great mass of cysts of a very peculiar character, and which I believe are never met with in any other organ of the body except the uterus, and never in the uterus unless conception has taken place, and only in one portion of the ovum, between the decidua and membrane of the chorion. If you look at *this specimen*, which is only a small portion of a large mass of these cysts which was expelled in the sixth month, with great hemorrhage, you will see that they are all covered on the outer surface by a soft yellow membrane, which is the decidua. I believe they have always at their commencement the decidua interposed between them and the uterus; but in *this specimen* of the disease at an early period, a few of these small cysts are seen without being covered with decidua, and if this was not left in the uterus on their expulsion, they must have been in contact with the uterus. The presence of a few of these small cysts is sufficient to produce abortion. In *this specimen* you can see some of these cysts not larger than a pin's head, and others as large as a walnut. They have a round, cylindrical, or oblong shape, with one or more slender stalks or roots, by which they grow from one another. A large cyst has generally a number of smaller ones growing from its outer surface by several slender filaments. Cruveilhier says these cysts are collected sometimes around a common axis, sometimes disposed like grapes, opposite to one another, or alternate at small distances; at other times they are separated by a great interval. Every vesicle has several slender roots or pedicles, some have two, others three, others four or five. Some of these are as slender as a spider's thread; at other times they are large and hollow. The vesicles, he adds, have an ovoid, spheroidal, cylindrical, or triangular form. Some have the shape of a bag-pipe, or are bicorned: they have all a reticular structure, and if an incision be made into one of them, we find that its cavity is traversed by a great number of lamellæ, and white, shining fibres, and divided into cells which are filled with a limpid or bloody fluid, and communicate with one another. The walls of the cysts consist of a firm, fibrous tissue. The greater number, he continues, are connected with the villosities of the chorion, but there is reason to believe that as they enlarge and multiply they may perforate the decidua. I have had no time to examine these cysts with the requisite care, to ascertain whether this account of their structure be perfectly correct. Their causes and origin are still involved in the greatest obscurity; for if it be true that they invariably commence in the villi of the chorion and placenta, it is not proved that the villi are simply transformed into these peculiar cysts. Bidloo thought they originated in lymphatic vessels, and Valisneri says that he ascertained with the microscope that the lymphatic vessels of the placenta, chorion, and amnion, and umbilical cord, have attached to them an infinite number of little globules which terminate at their ultimate ramifications in the same kind of structure, and he conceives that the vesicular mole is the product of these globules or pouches enlarged by diseased action. Others have taken the same view of the subject, although an absorbent and lymphatic vessel has never been seen, I believe, in the villi of the chorion. As the villi of the chorion are not bloodvessels, the hypothesis of Cruveilhier also necessarily falls to the ground. One thing, I believe, is certain, though not admitted by all writers, that this is a disease of the ovum, and that it is never seen unless conception has taken place. In all the specimens which I have examined, some fragments of the placenta have remained to prove this, and sometimes the membrane of the chorion and amnion have existed, and even an umbilical cord and embryo, as represented in *this* figure of Cruveilhier. A woman under the care of Dr. Seymour died some time ago in St. George's Hospital, after a mass of these serous cysts had been expelled from the uterus, and there was a true corpus luteum in one of the ovaria, with the yellow matter outside both layers of the Graafian vesicle, as you have seen in many other preparations in which ova were contained in the tubes and uterus, or had been expelled a short time before death. Those who maintain that these cysts are sometimes formed in the uterus without conception, have not attempted to explain the manner in which they originate, nor those large single hydatids which are also reported to have occasionally been developed in its cavity, without impregnation, but of which I have seen no example.

Many ova are expelled from the uterus soon after the commencement of this disease, and the symptoms do not differ from those which are observed in cases where abortion results from the other changes of structure already described. It is impossible, before the ovum is expelled and dissected, to know the precise disease which has led to the accident, unless ova expelled before prematurely by the same person have been carefully examined, and the cause of the habitual abortion determined, and even then the diagnosis is often imperfect. Where an ovum affected with this disease is retained in the uterus till the sixth or seventh month, the symptoms during the first three or four months do not usually differ much from those of ordinary pregnancy, except that in some there is a disposition to hemorrhage and abortion manifested. Menstruation is suppressed, the same sympathetic affections of the uterus are observed, the uterus enlarges, and its fundus about the fifth month can be felt in the hypogastrium, and the areolæ round the nipples are dark; but there is no quickening, and no movements like those of the fœtus felt through the uterine and abdominal parietes; the uterus feels softer than in ordinary pregnancy, and the sound of the fœtal heart and uterine arteries is not heard. The os uteri is felt open, but not hard or irregular, the neck is shortened, and the body felt enlarged. The diagnosis is sometimes extremely difficult; and without carefully examining all the symptoms, and ascertaining the exact condition of the uterus, it will be impossible to avoid committing mistakes in some of these cases. Sir C. Clarke says, "hydatids of the uterus do not appear to produce any peculiar symptoms, with the exception of one, to be mentioned hereafter. The greater number of the inconveniences attending the disease arise out of the pressure made by the enlarged uterus upon the circumjacent parts; such as retention of the urine from compression of the meatus urinarius, constipation of the bowels from compression of the rectum, œdema and cramp of the lower extremities. These symptoms are not, however, necessarily present, and instances have occurred in which they have been altogether wanting. In the examination of a patient, he adds, labouring under hydatids of the uterus, the body of the viscus will be found enlarged, and suddenly bulging out from the upper part of the cervix. All these symptoms attend other enlarged states of the uterus, but there remains to be mentioned one other symptom, which serves to distinguish this disease from all others, and from pregnancy, and this symptom is the discharge of an almost colourless watery fluid." This symptom has not been observed in any of the cases I have seen, and therefore little or no dependence can be placed upon it as a means of diagnosis. Profuse hemorrhage, however, has been an almost constant symptom for some time before the uterus has contracted upon its contents, and where the nature of the affection is clearly ascertained all the means in our power should be employed to bring on vigorous action of the uterus. The binder and pressure should be employed over the fundus uteri, and the ergot of rye given in sufficient doses. If these means should fail, and the hemorrhage should continue very profuse, it might be justifiable and proper to pass the whole hand into the uterus, and remove the mass of cysts. The os uteri has not, however, been in a condition to admit of the introduction of the hand, in any of the cases I have seen; and in the sixth month of pregnancy it is seldom safe or easy to pass the whole hand through the os uteri, and probably the object might be accomplished by introducing the hand into the vagina, and only dilating the os uteri with the fingers. We should trust to all the usual means for exciting uterine contractions, and checking the flooding, before recourse is had to artificial means of delivering the cysts.

The death of the fœtus in utero, and its premature expulsion, is frequently the effect of a morbid condition of the placenta. The diseases of the placenta, umbilical cord, and fœtus, and the symptoms and treatment of abortion, will form the subject of the next lecture.

LECTURE XVIII.

ON THE DISEASES OF PREGNANT WOMEN.—THE CAUSES, SYMPTOMS, AND TREATMENT OF ABORTION.

If the current of maternal blood which flows through the cavernous structure of the placenta, in which the fœtal capillary vessels are immersed, be obstructed by any cause even for a short time, the fœtus dies from asphyxia, and is prematurely expelled from the uterus, or abortion takes place. In the latter as in the early months of pregnancy, the placenta is liable to various alterations of structure which disturb the processes of respiration and nutrition in the fœtus, or which destroy altogether the relation between the mother and child. Inflammation of the placenta has been described by various pathologists. From the application of cold and external violence to the abdomen, and sometimes without any apparent cause, they state that the decidua covering the uterine surface of the placenta, and the whole vascular structure of the organ, becomes red, dense, and gorged with dark-coloured blood, and that deposits of blood, of greater or less extent, are formed within it, or on its internal surface. In a case related by M. Brachet a number of points of red passing into gray hepatization were observed when the placenta was divided. Fourteen abscesses, varying in size from a small pea to a nut, were also found studding the placenta. The pus was thick and white, like that of a softened tubercle, and it was not enclosed in a cyst, but formed between the fibres and vessels of the parts. Mr. Stratford relates the case of a woman who was attacked with pain in the back, extending down the thighs, in the third month of pregnancy. It had come on gradually with febrile symptoms, rigors, and uterine hemorrhage. These symptoms increased, and after the expulsion of the ovum the tenderness in the region of the uterus subsided. The placenta was large, soft, and spongy, and its surface was covered with flakes of coagulated lymph. These were particularly marked on its inner surface, where some were loose and easily detached. The fœtal membranes were thicker than natural, and the umbilical cord and fœtus were loaded with serum. Andral and Cruveilhier also state that they have seen false membranes coating the uterine surface of the placenta, and its substance occupied with small abscesses. Dr. Wilde, who published his elaborate Essay on Diseases of the Placenta in 1833, believes that placentitis sometimes terminates in resolution, and that the organ returns to the healthy performance of its functions. At other times he thinks it proceeds to hepatization, suppuration or gangrene, and that it sometimes terminates in induration of the organ, of a mild or malignant nature. The disease, he says, may extend to the uterus, and cause the placenta to become firmly united to its inner surface by exciting inflammation of the lining membrane. Dull pains, he says, in the region of the uterus, sometimes intermitting, slight pyrexia, high-coloured urine, constipation, feeble movements of the fœtus, sense of unusual weight in the region of the uterus, and premature expulsion of its contents, are the symptoms characteristic of placentitis. But the diagnosis of this and all other affections of the placenta he admits to be very uncertain and difficult. I have never seen an abscess in the substance of the placenta, or the slightest appearance of lymph, pus, or false membrane, either on the fœtal or uterine surface of the organ. I am therefore inclined to think that inflammation of the placenta is a rare disease, and that the other affections of the organ are, in all respects, unlike the diseases of the lungs of the adult.

Scrofulous tubercles have very rarely been seen in the human placenta: no example of this disease has come under my observation. In the Archiv. Gén. de Méd. June, 1834, it is stated by M. Hardy, that, in examining the body of a woman who died of phthisis in the sixth month of pregnancy, there were found, besides the tubercles of the lungs, small crude tubercles on the external surface of the uterus under the peritoneum, and eight or ten on the uterine surface of the placenta. Some of these were as large as a pea, two had almost the bulk of a filbert; they were of a whitish colour, and pretty resistant; they might have been taken, it is said, for scirrhous tissue, if the coexistence of tubercles in the lungs and uterus, and the same organ, had not shown their connection with this latter species of morbid production. On examining the fœtal surface of the placenta, a great number of small miliary tubercles, covered by the amnion, were felt by the fingers. The organs of the fœtus were all healthy, and exhibited no traces of tubercles.

Sometimes calcareous or ossific deposits, of a yellowish-white colour, are seen, not only on the uterine surface of the placenta, but throughout the whole mass to the membranes on the fœtal surface. In some examples of this disease the deposits appear to be confined to the decidual arteries, but in others they pervade all the different structures. Though I have seen these to a great extent, the fœtus has never appeared to suffer from them: but M. Desormeaux relates a case in which the whole of the uterine surface was covered with these concretions, and the nutrition was interrupted. Carus states that ossific deposits in the placenta are observed at Dresden from two to eight times in a hundred cases of labour. They are most frequently found, he thinks, in women of scrofulous or cachectic habit, or in those who are subject to nervous affections. These concretions, he affirms, are always found on the uterine surface, and are generally collected together in patches, and not scattered throughout its whole extent. Their consistence varies from that of albumen to that of stone. Their component parts are phosphate and carbonate of lime, phosphate of magnesia, and a very small quantity of sulphuric acid. M. Carus compares their formation to the covering of the egg in birds and in some species of reptiles.

Hypertrophy or atrophy of the placenta, and placental apoplexy, are much more frequently met with than any of the preceding diseases, and often cause the death of the fœtus, in repeated pregnancies, about the same period. It is necessary, however, to state, that disease of the placenta is not always the cause of this accident; for in several individuals who have had a number of dead children before the full period, no morbid alteration of structure has been discovered either in the placenta or in any of the other contents of the uterus. When the placenta is affected with *atrophy*, the disease has usually extended only to a portion of the organ, and the remainder has been left in a healthy condition. The fœtal vessels, in the affected part, appear to be almost wanting in some specimens, and in others the part is so thin and transparent that it seems to consist only of the membranes. Detachment of the diseased portion of placenta, and hemorrhage, are generally the first symptoms of this disease. I cannot believe that this condition depends on inflammation and absorption of the fœtal vessels; it is much more reasonable to suppose that these vessels never existed at all, than that they had been removed by the "active exhalants of the uterus." In *hypertrophy* of the placenta, the whole mass of the organ, or particular portions of it, become harder and thicker than natural. The placental decidua is usually of a firm consistence, and of a yellow colour, and the whole uterine surface presents a peculiar cicatrized or puckered appearance, with the central part depressed, and the margin thick and elevated. On cutting into the substance of the hypertrophied portion, the whole cavernous structure is often found distended with layers of coagulated blood, which have been formed at different times, and resemble somewhat the layers of blood in aneurismal sacs. Most frequently there are several clots of different sizes found in different lobes of the placenta, and the fibrin in these clots is sometimes softened so as to resemble pus.

I have selected the thirteen following cases, from a great many which I have seen, to illustrate the causes, symptoms, and treatment of the organic diseases of the placenta, and their usual consequences, the premature death of the fœtus, and its expulsion from the uterus. The greater number of the women in whom these affections occurred were in delicate health, though afflicted with no specific disease; in scarcely any of them had an injury been inflicted which could excite inflammation of the uterus and placenta, nor were they in a condition predisposed to inflammation, and in none were the symptoms such as to justify the conclusion that the changes of structure in the placenta were the consequences of inflammation; the symptoms of uterine irritation and congestion observed in some being the effect, and not the cause, of the morbid state of the placenta and death of the fœtus. The instances in which malformations of the fœtus coexisted with disease of the placenta were not sufficiently numerous to warrant us in believing that they were necessarily connected together.

I. — August 31st, 1828. — A woman, æt. 37, about six weeks ago, while in the seventh month of pregnancy, began to experience a sense of constant dull pain in the uterus, and soon after perceived the abdomen to enlarge with unusual rapidity. The lower extremities became œdematous, the urine was secreted in sparing quantity, and the respiration difficult when in the recumbent position. The movements of the child were observed to be remarkably languid. All these symptoms having become more severe, and the abdomen greatly enlarged, labour pains commenced last night, and about five quarts of liquor amnii escaped, and soon after a fœtus, which had been dead for some time. I examined the fœtus and its involucra with the greatest care, but could discover no appearance of vessels in the amnion, or lymph effused on its fœtal surface. The chorion was also in a perfectly healthy condition: the placenta was of the natural size, but its whole mass was unusually soft in texture, and a considerable portion of it was converted into a dark-coloured substance, very similar to what is observed in portions of the lungs of the adult in pulmonary apoplexy. In a case of dropsy of the amnion, with hydrocephalus in the fœtus, which occurred in March, 1828, the placenta was of the natural size, and remarkably soft in texture.

II. — A lady about 30 years of age was delivered of a child in the seventh and a half month, which showed feeble signs of life. The liquor amnii amounted to six pints. The peritoneal sac of the fœtus contained four ounces of serum, and the whole cellular membrane of the body was distended with fluid to the utmost extent. The pleura covering the lungs on both sides was studded with small tubercles, and on the surface of the liver and spleen the same appearance was distinctly perceptible. The placenta was fully three times the common size; its vascular structure appeared to be destroyed, and its place occupied by a soft, yellow-coloured substance, like adipose matter. I have never since seen a placenta in the same condition as this.

III. — On the 10th of February, 1833, with Mr. Stodart, I saw a young woman who became affected with dropsy in the seventh month of her pregnancy. The lower extremities, trunk of the body, and face, were very œdematous, and there was distinct fluctuation in the abdomen. Difficulty of breathing, diminished secretion of urine, and aggravation of the dropsy, followed, though bloodletting, diuretics, and cathartics, had been employed. Labour took place on the 17th. The child was dead and dropsical, and about one-third of the placenta was in an apoplectic state. Portions of the remainder were in an indurated and diseased condition. The dropsy speedily disappeared after delivery. It is difficult to explain satisfactorily the manner in which dropsy in the mother is produced by disease of the placenta, or why in some pregnant women the kidneys do not secrete the urine in the ordinary way, but resume their healthy function immediately after labour. This can only be produced by nervous sympathy, and if the functions of the stomach are often disturbed by this cause, there is no reason why the kidneys should not suffer from the same.

IV. — After having had several healthy living children at the end of the ninth month, a lady about the middle period of life, and in delicate health, without any organic disease, had repeated abortions in the early months, and three dead children in the seventh month of pregnancy. The movements of the child, after being quite peculiar for some time, always ceased two or three weeks before labour began. The cause of the death of the fœtus had not been ascertained. In July, 1833, I was requested to see this lady, who was again seven months pregnant, and had begun to feel the same peculiar struggling or convulsive movements of the fœtus, which had preceded its death in former pregnancies; so closely had she watched the symptoms, that she knew the time when it expired. About a fortnight afterwards labour pains came on, and a small emaciated child, with the skin peeling off, was expelled, and soon after the placenta, which was five inches in diameter, and puckered up in the centre like a cancerous breast. Two of the lobes appeared healthy, but the remainder was hard, and of a dusky yellow colour. She became pregnant again, but the same symptoms were later in appearing, and labour took place in the eighth month, before the child had died, and it was born alive, but weighed, only, if I recollect right, four pounds and a half. It was, however, healthy, grew rapidly on being properly nourished, and is now a very beautiful child. The patient on the occurrence of the pregnancy had been removed from a damp to a dry residence, took chalk, mercury, and sarsaparilla, and had leeches repeatedly applied to the region of the uterus. Another, and a second pregnancy, has since taken place, and the same disease has commenced in the placenta, but both children have been prematurely born alive, and in a healthy though emaciated state: they did not weigh more than half the average weight. I had resolved in this case to induce premature labour at the seventh and a half month of pregnancy, if the symptoms had manifested themselves at this period, and the same movements which preceded the death of the fœtus had been experienced.

V. — Dr. Burder wrote to me on the 1st of August, 1834, respecting a lady who had been some years under his care, and who more than once encountered premature labour after being delivered of several healthy children at the full period. The whole system, particularly the uterine system, he said, was very relaxed. In the early part of marriage she had profuse leucorrhœa. For some time there had been sallowness of complexion and vitiated hepatic secretion. The plan of treatment adopted by Dr. Burder comprised mild mercurial alteratives, bitters with soda, the horizontal posture, the free use of cold to the loins, and much open air without fatigue. She had miscarried in January, and twice before went to the seventh month, and had dead children. She was now, August, 1834, three months pregnant, and the treatment adopted did not prevent the death and premature expulsion of the child. In 1836 the same occurrence took place, and her medical attendant in the country sent the placenta to me, and I had the drawing of it I now show you made by Mr. Perry while it was in the recent state. The whole uterine surface was in a morbid condition, the centre being depressed like a cup, and the border thick, elevated, and puckered with numerous venous openings in the thickened decidua. The whole placental decidua was thick, hard, and of a yellowish-white colour, almost like leather, and in the centre neither arteries nor veins were visible, but clots of blood were hanging out of the orifices of the veins on the margin, and fluid blood could likewise be pressed out of these. On cutting open the placenta, the whole cavernous structure, particularly the part near the fœtal surface, was filled with coagulated and fluid blood. Pregnancy again took place in 1838, and a feeble premature child was expelled. The same occurrence has since happened twice, and I have no doubt, though I had not an opportunity of examining the placentæ, that in all the cause was the same.

VI. — On the 26th January, 1836, a woman, æt. 33, was delivered of a dead child of seven months, in a putrid state. The movements had ceased two weeks before. Both feet were clubbed. The funis was very thick, soft, and of a livid colour. The placenta, which was remarkably thick, was expelled without assistance. Near the insertion of the cord in the cavernous structure there was a clot of blood as large as a hen's egg, composed of different layers, which had obviously been deposited at intervals. The whole placental decidua was thick and hard, and irregular; in other parts of the cavernous structure there were smaller coagula of blood, which had become softened, and looked at first sight like abscesses. This appearance I have witnessed to a much greater extent in other morbid placentæ, which I have supposed might arise from softening of the fibrin, as has sometimes been observed in blood which has coagulated in obstructed veins. This patient had been delivered nine months before of a dead child in the seventh month, and both feet were clubbed. Fifteen months previous to this she had been delivered of a living child in the eighth month, who is now in good health, and has also club-feet. The condition of the placenta was not ascertained in the first two labours.

VII. — In June, 1838, Mr. Pollard brought to me a dead fœtus of six or seven months, enclosed within its membranes. The movements had ceased, and there had been sanguineous discharge, for some time before labour came on. On the uterine surface the placenta was white and hard, and there were several irregular projecting portions. At the apex of three of these elevations there was an opening, which was evidently a decidual vein, and the decidua around these was remarkably thick and hard. Each of these apertures led to a large, smooth cavity in the cavernous structure, which contained a hard coagulum of blood. The blood was extravasated, but coagulated in the distended vessels in which it had been circulating: and this is, I believe, the case in all instances of placental apoplexy; at least it has been so in all I have examined. It is a condition of the placenta more resembling aneurism than apoplexy. There had been no local or constitutional symptoms in this patient to justify the conclusion that these changes of structure in the placenta were the results of inflammation.

VIII. — On the 2d November, 1838, a lady, in very delicate health, was delivered, in the seventh month, of a dead child, the cuticle of which was peeling off, and the thorax, abdomen, and cellular membrane, filled with serum. The movements of the fœtus had gradually ceased five weeks before pain came on, and she had been exposed to no accident which could account for this. The placenta was expelled soon after with the child, and the whole uterine surface was in a yellow indurated state; and there were masses of coagulated blood in different parts of the cavernous structure. This lady had miscarried at the commencement of the third month two years before, and the membranes of the ovum were all in a thickened diseased condition, and the cells of the chorion and placenta were filled with hard masses of coagulated blood. This disposition to disease in the ovum has disappeared altogether since her removal into the country, and she has been safely delivered of a healthy child at the full period.

IX. — On the 14th November, 1838, I saw a lady in consultation, also in an impaired state of health, who had been attacked early in the morning with profuse uterine hemorrhage, about the end of the seventh month of pregnancy. The placenta did not present, and the membranes were un-ruptured. After the liquor amnii had been discharged, the hemorrhage ceased, and a dead child was soon expelled, and also the placenta, which was in some parts much thicker and harder than natural. On cutting into these parts, which were remarkably dense, they were found to contain masses of coagulated blood, which must have been deposited at different periods. The whole placental decidua was thicker and harder than natural.

There had been no tenderness about the uterus, fever, or any other symptom by which it could have been suspected, before the occurrence of hemorrhage, that disease existed in the contents of the uterus.

X. — A lady, apparently of sound constitution, had two healthy children born at the full period, and afterwards was thrice delivered prematurely of dead children. The placenta was retained some hours after the birth of the second of these, and I was called to extract it, but succeeded only partially, in consequence of the firm adhesion of the placenta to the uterus, and the contracted state of the cervix. The portion that was removed from the uterus was in an indurated state ; and I had no doubt the death of the fœtus, on both occasions, resulted from disease of the placenta. On the 9th September, 1839, I again saw this lady in consultation, who was seven months pregnant, and had no doubt, from the subsidence of the abdomen, and sanguineous discharge from the vagina, the absence of the sound both of the fœtal heart and uterine arteries, flaccidity of the breasts, and no movements having been felt by her for some time within the uterus, that the fœtus had again perished from disease of the placenta. It was proposed to induce premature labour; but as the general health did not appear to be suffering, it was considered more prudent to wait for natural uterine contractions, which soon took place after a short drive in a carriage. The placenta was hard, yellow, thicker than usual, and the cavernous structure was partially filled with coagulated blood. A portion of the placental decidua was covered with a thin, dark, firm coagulum of blood, which must have been formed some time before the expulsion of the child. Before the death of the fœtus in this case there was also no local or constitutional disease in the mother to indicate what was going on within the uterus.

XI. — In October, 1841, I saw a lady in consultation, who had been married three years, and had been delivered of three dead children; the first at the sixth, the second at the eighth, and the third at the sixth and a half month of pregnancy ; and in all, the movements had ceased a considerable time before labour pains came on. No circumstance occurred to account for the first or subsequent premature confinements, and she had had no complaint during the whole period of three years after her marriage, except a slight disposition to hysteria, and often an unpleasant sense of heat and irritation about the uterus, and occasionally around the umbilicus. There was no hardness, fulness, or enlargement about the abdomen; the uterus was in its natural situation, and perfectly healthy : the placenta had not been examined, and it was impossible, therefore, to tell from what cause the fœtus had died. Suspecting that there might have existed some disease of the placenta in all of them, a mild course of mercury and sarsaparilla, and a residence in a healthy, dry situation, with regular exercise, was recommended and adopted ; but the mercury soon affected the mouth, and was discontinued. The health, however, was as good as it had ever been about December, 1841, when pregnancy again took place, and she continued without any unfavourable symptom, and feeling the movements of the child distinctly, till the 23d May, 1842, when she was attacked with violent sickness and vomiting, without any adequate cause, and which was not at first supposed to be connected with the uterus. The irritation of the stomach continued for twelve hours in spite of all remedies, and then a dead child, with the cuticle peeling off, was expelled. The placenta was sent from the country for my inspection, and I never saw a finer specimen of hypertrophy and apoplexy of the organ. The edge at one part was more than an inch in thickness, and hard like cartilage; and the whole central part was not half an inch in thickness, and seemed depressed like a saucer in the middle. Coagula of the fibrin of the blood were hanging out of the orifice of the great decidual veins on the thickened margin of the placenta; and when cut into, the cavernous structure here contained large, hard coagula.

XII. — A lady, six months pregnant, apparently in a state of perfect health, went to Covent-Garden Theatre, and being alarmed by the firing of muskets on the stage, became faint, and returned home, with slight hemorrhage from the uterus. In the course of a few hours uterine contractions came on, and a dead fœtus, with the morbid placenta you now see, was expelled. Rather more than one-fourth part of this placenta is in a healthy condition, but the remainder is so thin that it is almost transparent; indeed, is quite so in some parts, and seem to consist of nothing but the two layers of decidua, and the amnion and chorion. The thin part must have been some time separated from the uterus, though no hemorrhage took place before the alarm in the theatre. The whole of the portion affected with atrophy was covered with a thick mass of blood, consisting of different layers of fibrin, which must have been deposited at considerable intervals. Those layers are recent which had been next the uterus, and those long deposited which adhere to the placenta. In another specimen of atrophy of the placenta, which I shall hand round, the history of the patient from whom it was expelled was very similar to that of the preceding. There had been few or no symptoms before some trifling accident brought on uterine contractions. If the placenta be affected with this disease in a much less degree than here, the functions of nutrition and respiration may be carried on, though imperfectly, by a healthy portion of the organ; and the child may be retained to the full period, and be born alive, though in a weak, emaciated state.

XIII. — It is not unusual, in cases of twins, for one child to die in the early months of pregnancy from disease of the placenta, and for the other child, whose placenta is sound, to live to the end of the ninth month, and be expelled in a state of perfect health, and well nourished. I now show you a preparation of the placentæ of twins, one of which is perfectly healthy, with all its fœtal veins and arteries minutely injected; and the other in a yellow indurated state, with a dead, shrivelled fœtus (squeezed into a flat form like a herring) of five months attached to it by a soft, slender umbilical cord. The vessels of this cord, and of the diseased placenta, could not be injected. The dead fœtus was retained in the uterus four months along with the healthy living fœtus; and, from the symptoms, there was nothing to indicate that it had created any disturbance. The placentæ were expelled spontaneously by the uterus, and the patient recovered perfectly. The child which was attached to the healthy placenta is now alive. Examples of this kind are not uncommon: several have fallen under my own observation. Cruveilhier has described a similar case, and given a representation of the appearances presented by the healthy and atrophied placentæ, which were adhering together, though not connected by vessels. One child is developed to the sixth, the other only to the second month. The uterine surface, says M. Cruveilhier, has the appearance of being cicatrized, and it had long been detached from the uterus. In a few cases which have been recorded, the dead embryo and diseased placenta have been expelled at an early period of pregnancy, and the other child has remained in the uterus to the full period.

Knots formed on the umbilical cord, and great twisting of the cord upon itself, and firmly surrounding the neck and body of the embryo and fœtus, may cause its death and premature expulsion. But the fœtus itself is liable to be attacked with many diseases, and the embryo is often destroyed by an imperfect formation or arrest of development in its different organs. The germ, even before its vivification in the ovary, as Dr. Montgomery has observed, may have a morbid taint communicated to it from the system of the female in whom it resides, or from that of the individual with whom she cohabits, so that the tendency to disease or malformation sometimes precedes the first impulse that leads to the establishment of life. The brain of the fœtus, the thoracic and abdominal viscera, may all be affected with malformations and diseases incompatible with life, and where the life of the fœtus is extinct it becomes an extraneous body, and expulsive efforts on the parts of the uterus are usually soon set up, and abortion ensues as the necessary consequence.

SYMPTOMS AND TREATMENT OF ABORTION.

In the early months, when abortion is about to take place, there is more or less hemorrhage, with pains at intervals like those of labour. Often there is no constitutional symptom observed before the discharge of blood occurs, and which is at first in trifling quantity and unaccompanied with pain. Where the embryo has perished from any of the causes above described, and where the decidua has not adhered firmly to the uterus, the dilatation of the os uteri and the expulsion of the ovum has been effected in a short time without much pain or hemorrhage. In fifty-six cases of abortion, of which I have preserved the histories, uterine hemorrhage took place to a considerable extent only in twenty-seven; in all the others the ovum was excluded from the uterus with little loss of blood. Where the membranes of the ovum are thickened, and their attachment to the uterus are unusually strong, sometimes several weeks or even months may elapse before the uterus, even when the orifice and cervix are dilatable, can exclude its contents; and not unfrequently when it does succeed, the uterine decidua is torn away from the circumference of the placenta, and left behind. At a later period of pregnancy the expulsive process for the most part is preceded by unusual depression of strength and spirits, by attacks of faintness, sense of coldness in the pelvis, palpitation, flaccidity of the breasts, a disordered state of the stomach and bowels, and other symptoms which indicate that the fœtus is dead. Where there is an unusual afflux of blood to the uterus, or of great congestion in its vessels, the uterine contractions and discharge are usually preceded for some days by rigors, lassitude, heat of skin, thirst, loss of appetite, excited state of the circulation, and sense of weight in the pelvis and loins.

In all cases of threatened abortion, we should endeavour to ascertain, if possible, the cause, and the probability there is of preventing the accident. If the symptoms have followed a violent mental or physical shock of any kind, and abortion had never occurred in the same individual before, and symptoms of increased determination of blood to the uterus preceded the discharge and pain, the prognosis may be more favourable than if the symptoms had occurred spontaneously after repeated miscarriages, and when the ovum was in a morbid state. In the greater number of cases, however, it is impossible to ascertain the cause with absolute certainty, and the first thing we have to do in cases of threatened abortion is to determine whether an attempt should be made at all to preserve the ovum, or whether the efforts of the uterus to get rid of its contents should not be assisted. The quantity of blood which has escaped, and the pain experienced, do not enable us in all cases to settle this point; for some women have gone to the full period who have had considerable hemorrhage from the uterus, and pains like those of labour in the early months. Without being permitted to ascertain by an internal examination the condition of the os and cervix uteri in all cases of threatened abortion, it is impossible to say what is the condition of the uterus, or whether it is right to make an attempt to prevent it. Some women unwisely refuse to allow an internal examination to be made under such circumstances, and when this is so, we are left completely in the dark about the state of the patient, and the treatment which ought to be pursued. The hemorrhage and pain may be trifling when the os uteri is soft and dilated, the neck obliterated, and the ovum has partially escaped. In all cases, therefore, if possible, and there are few where it is impossible, before you form or express any opinion, ascertain whether this be the state of the part, or whether the os uteri be closed and unyielding, so that the finger cannot be introduced and the ovum felt. Where the orifice of the uterus is closed, an attempt should always be made to arrest the hemorrhage and uterine contractions, and even sometimes when it is slightly open your efforts are successful. If the person is plethoric, and the circulation is excited, it is advisable to take some blood from the arm, to recommend a horizontal position on a mattress, with light covering and cool air; ice in a bladder, or napkins soaked in vinegar and water, over the hypogastrium; cold drinks and light food. Two grains of the superacetate of lead and a quarter of a grain of opium should be given every three hours till the hemorrhage diminishes: or infusion of roses, with diluted sulphuric acid and a few drops of liquor opii sedativus, at short intervals. If there is much pain, it is often the best practice to begin the treatment at once with a full dose of the liquor opii sedativus.

Our object in the whole of the treatment is to check the hemorrhage, and further detachment of the placenta, by promoting the coagulation of the blood in the vessels which have been exposed in the lining membrane of the uterus, and by preventing uterine contractions. All the remedies we employ should be directed to these objects, diminishing the flow of blood in the uterine vessels, and preserving the uterus in a quiescent state. It is necessary to persevere in this plan for a considerable period, at least till quickening has taken place, and the discharge has disappeared for several weeks. Then a better diet, and gentle exercise in the open air, may be allowed, but with extreme caution. If the discharge is renewed by the slightest exertion, becomes of a brown instead of a florid colour, and does not coagulate, and the signs of early pregnancy cease, all our attempts to prevent abortion will be unsuccessful. Then it is our object to get the orifice of the uterus dilated, and the ovum detached from its inner surface, and expelled or extracted with as little pain and loss of blood as possible.

Opium and anodynes of all kinds are here injurious, by checking uterine action. Ergot is a far more appropriate remedy. It may be given in scruple doses, at short intervals, with advantage, where the os and cervix uteri are dilated, and the ovum is partially in the neck, and the uterus is indisposed to contract. I regret to say, that in the majority of these cases, and in a great many cases of uterine hemorrhage and retained placenta at a later period, it has been given without the slightest effect being produced. Sometimes, in these circumstances, the ovum can be extracted with the fore and middle finger, employed as a pair of forceps, (they are the only safe forceps that can be used for the purpose,) introduced within the os uteri, but no advantage is derived unless the entire ovum be removed, which it is often difficult to do, unless a considerable part of it has been pressed into the orifice. The orifice may be dilated gently with the fingers at the same time, which has often the effect of exciting the uterus to contract and expel the ovum. But we meet with cases where there is a great hemorrhage, and the os uteri is not sufficiently dilated to admit of the introduction of the fore and middle fingers, and the ovum has not descended into the cervix, and cannot be grasped, and the application of cold, and all the other means, have failed to check the discharge. In these cases there is no remedy equal to a large, soft, dry sponge passed into the vagina, and firmly pressed up against the os uteri. If a sponge be squeezed into a conical shape, and covered with lard, it can be easily introduced, and in a number of alarming cases of hemorrhage, where the ovum could not be extracted, it succeeded in effectually arresting the flow of blood, till the uterus contracted and expelled its contents. There are few cases of abortion in which, by the diligent application of these means, you will not succeed in preventing any serious mischief from hemorrhage. It is necessary, when treating a case of abortion, to examine all the coagula carefully, to know whether the ovum is still retained within the uterus, or, if the ovum has been expelled, to determine whether the uterine decidua has been left in the cavity. The embryo, with the amnion, chorion, and decidua reflexa, as I have already stated, often escape, and the uterine decidua is left for days, or even for weeks, within the uterus. When this is ascertained, the patient should be informed that a portion of the ovum is still retained, and she should not be permitted to leave the recumbent position, and the os uteri should be examined occasionally, that the decidua may be removed when it has been forced into the cervix. It is impossible, I think, to treat abortion on scientific principles, without an intimate knowledge of the structure, functions, and diseases of the human ovum; and I cannot omit this opportunity of again recommending the subject to your especial attention and study. By the examination of morbid ova great light is thrown upon subjects which would otherwise be involved in obscurity. In a great proportion of cases which I have examined, in four only out of fifty-six was the ovum in a healthy condition. There can be no doubt that the diseases of the ovum are most frequently the result of constitutional disorder in one or both parents, and that they do not arise from inflammation; but I must admit that in some cases the cause cannot be ascertained with certainty, and that all remedies are unavailing in preventing their recurrence in repeated pregnancies. In some patients who have had several abortions from thickening of the decidua, and coagulation of the blood in the cavernous structure of the placenta and chorion, by the application of a dozen or more leeches to the round ligaments every month, the free use of saline cathartics, by light diet and gentle regular exercise, the habit of aborting, as it is usually expressed, has been broken. In other cases this treatment has entirely failed, and tonics, wine, bark, iron in all forms, good diet, and the recumbent position, have been equally unsuccessful. Although it is not in our power to demonstrate the fact, yet I have no doubt that the stream of maternal blood which flows through the placenta is sometimes in a vitiated condition, and unfitted for the functions it was intended to perform.

LECTURE XIX.

ON THE COMMUNICATION OF SCARLET FEVER, MEASLES, SMALL-POX, SYPHILIS, AND OTHER DISEASES, TO THE FŒTUS IN UTERO.—DROPSY OF THE AMNION.

In many pregnant women the blood is in a diseased condition, and I am persuaded that this is the cause of nearly all the morbid alterations of structure in the placenta, and other parts of the ovum, which have been described in the last two lectures. Most of the thirteen women whose cases were last detailed to illustrate the organic diseases of the placenta, were in delicate health, but appeared to labour under no specific complaint; but some specific disease may have been latent in all of them, for we are often prevented from pushing our investigations sufficiently far, under such circumstances, to enable us to ascertain the whole truth. Before taking leave of this subject — the organic diseases of the placenta, and the death of the fœtus in repeated pregnancies — it seems necessary to state the facts which have been ascertained with certainty respecting the communication of morbid poisons from the mother to the fœtus in utero. Some years ago, I saw a child born in the lying-in ward of St. Marylebone Infirmary, whose abdomen, thighs, and legs, were covered with small and large vesications, which contained a turbid fluid. The mother had been out of health during pregnancy, but did not appear to be affected with any specific disease. Lobstein, and Joerg, have also observed pemphigus on children at the time of birth. A young married lady whom I have lately attended in her first confinement had a voracious appetite during the last three months of her pregnancy, and indulged in all kinds of stimulating rich food. A few days after the birth of her child, which was apparently healthy, there appeared at intervals with fever a great number of small and large dark-coloured vesicles over the lower part of its abdomen, inferior extremities, neck, and head, which had all the characters of pemphigus. These had appeared before the mother's milk could be taken in sufficient quantity to produce this disease, and I have no doubt the disease was communicated before birth. When I first saw this eruption I had some suspicion of a syphilitic taint in the parents, but this was perfectly groundless; and the same effect may be produced, as Mauriceau has so clearly stated, and who knew this disease was not syphilitic, by an excited plethoric state of the mother in the latter months of pregnancy, from the same cause as in the preceding case, improper food. Dr. Webster, who saw this child in consultation with me, recommended in accordance with myself changing the nurse, and giving a grain and a half of chalk and mercury, with some rhubarb, night and morning, for a fortnight, to this child, by which means its health rapidly improved, and the pemphigus disappeared. But the lady's milk did not disappear so readily, and she determined, contrary to our opinion, to make the experiment a second time of suckling her own infant; but before recommencing suckling, she got the child of her wet nurse to draw out her nipples, and prepare her for the duty she was determined to undertake. In a few days the wet nurse's child was attacked with fever, and pemphigus appeared all over the body. If I recollect right, Dr. Blundell has related in his lectures the case of an infant which was under the care of Dr. Lowder, and was twice cured of syphilis by mercury, but the symptoms recurring a third time, he suspected the infection was drawn from the mother's milk: the child was weaned, and cured without difficulty.

The disease called by Underwood skin-bound, induration of the cellular membrane, has been observed in some instances completely formed at the time of birth. There are examples of scarlet fever, measles, and small-pox, being communicated to the fœtus in utero. In the course of the last year, Dr. Montgomery states that he attended a patient who was delivered a month before her time, when just recovering from an attack of scarlatina: the child's skin exhibited the eruption in several places. "Very many instances," he observes, "of the eruptive diseases have been noticed in the immature fœtus and child at birth. Vogel and Rosen mention instances of children born with the traces of measles, and Guersent says he saw an infant born with the eruption on it, having taken the disease from the mother."

Not only has small-pox been communicated by the mother when labouring under the disease, to the fœtus in utero, but the contagion has been conveyed to the fœtus by the mother when she has been in perfect health.

In the 28th volume of the Philosophical Transactions, there is the history of a woman, who, having had mild small-pox, miscarried with a dead female child, whose whole body was covered with variolous pustules full of ripe matter.

There is another case recorded in the 46th volume. "A woman big with child, having herself long ago had small-pox, very assiduously nursed a maid-servant during the whole process of this disease. At the proper time she brought forth a healthy female child, in whose skin Dr. Watson asserted that he discovered evident marks of the small-pox, which she must have gone through in the womb: and the same physician pronounced that this child would be free from future infection. After four years her brother was inoculated; and Dr. Watson obtained permission of the parents to try the same experiment on the girl. The operation was performed on both children in the same manner, and the pus used in both cases was taken from the same patient. The event, however, was different: for the boy had the regular eruption, and got well; but the girl's arm did not inflame nor suppurate. On the tenth day from the insertion of the matter, she turned pale suddenly, was languid for two days, and afterwards was very well. In the neighbourhood of the incision there appeared a pustule like those pustules that we sometimes observe in persons who, having had the disease, attend patients ill of the small-pox." This case affords undoubted proof that the contagion of small-pox may be communicated to the fœtus in utero, where the mother is not affected with the disease; and the same circumstance must have happened to Mauriceau, before he was born. Van Swieten, says Mr. Hunter, likewise mentions what Mauriceau relates of himself. This author testifies that he had often heard his father and mother say, that the latter, when big with him, and very near her time of delivery, had a painful attendance on one of her children, who died of the small-pox on the seventh day of the eruption; and that on the day following the death of this child, Mauriceau came into the world, bringing with him five or six true pustules of the small-pox. "It does not appear," observes Mr. Hunter, "however, from this recital, whether or not Mauriceau passed through life free from any posterior infection; but admitting that this eruption of Mauriceau's was truly the small-pox, yet I should very much doubt his having caught it from the child who died of it, as it should seem that the pustules of Mauriceau were of the same date with those of the child who died." Mr. Hunter thought there were two modes in which small-pox could be communicated to the fœtus in utero — one by infection from the mother while labouring under the disease, the "other by the mother's having absorbed the small-pox matter from some other person, and the matter being carried to the child from the connection between the two, which we may suppose done with or without first affecting the mother." This view was, indeed, previously stated by Dr. Mead, who relates a case to prove that the fœtus in the womb may be infected by the contagion of which the mother does not partake. "A woman, who had long before suffered the small-pox, nursed her husband, under that disease, towards the end of her pregnancy, and was brought to bed in due time. *The child was dead, and covered all over with variolous pustules.*"

These very curious facts I think satisfactorily prove that the contagion of small-pox may be conveyed to the fœtus when the mother is not affected by the disease; but if you entertain the slightest doubt on the subject it will be removed by the two following interesting cases, related by Dr. Jenner in the first volume of the Medico-Chirurgical Transactions. If this be demonstrated, it is highly probable that various other morbid poisons may be transmitted to the fœtus, and produce their specific effects upon it, without the system of the mother being implicated, and without our being able to trace them to their origin.

"About five years ago," says Dr. Jenner, "I was requested by Dr. Croft to vaccinate the infant of Mrs. W., a lady in Portland Place. The vaccine fluid, which was inserted fresh from the arm of another infant, produced scarcely any effect beyond a little efflorescence on the part, which in a few days disappeared. On my expressing my surprise at this, such an occurrence happening very rarely, Mrs. W. soon removed my embarrassment by the following narrative. A few days previous to her confinement she met a very disgusting object, whose face was covered with the small-pox. The smell and appearance of the poor creature affected her much at the time, and though she mentioned the circumstance on her return home, she had no idea that her infant could suffer from it, having had the small-pox herself when a child. During a few days after its birth the little one seemed quite well, but on the fifth day it became indisposed, and on the seventh the small-pox appeared. The pustules, which were few in number, maturated completely. Dr. Croft, who attended her, being curious to know the effect of inoculation from one of the pustules, put some of the matter taken from one of them into the hands of a gentleman eminently versed in that practice, which produced the disease correctly. Mrs. W. was not sensible of any indisposition herself from this exposure, nor had she any appearance of the small-pox."

"Another case, similar in its general character to the above, was lately communicated to me," says Dr. Jenner, "by Mr. Henry Gervis, a surgeon of eminence at Ashburton, in Devonshire. Mr. Gervis says, 'the small-pox having appeared in the village of Woolson-Green, about three miles from Ashburton, the 6th of May, 1808, I vaccinated a poor woman, the wife of James Basquell, who was in the last month of her pregnancy. Her three children had been inoculated the preceding day with variolous matter, by the surgeon who attended the poor of the parish, and who had very properly declined inoculating her also, on account of her particular situation. I made two punctures in each arm, each of which fortunately succeeded, and she regularly passed through the disorder, complaining only on the tenth and eleventh days, when the areolæ was most extended, as is usual. I saw her very frequently during the progress of the disorder, and once or twice after its complete termination; I therefore can speak positively, that, during that time, she laboured under no symptom but what is connected with the cow-pox. From this period she continued perfectly well, and on Saturday last, the 11th instant, she was delivered of a female child, having, at the time of its birth, many eruptions on it, bearing much the appearance of small-pox in the early stage of the disease. This event happened five weeks after her vaccination, and one month after she had been exposed to the variolous infection of her own three children, and that of several other persons in the same village. On the 14th I visited the child again, when I found the eruption had increased to some thousands, perfectly distinct, and their characters well marked. Many among the most respectable physicians and surgeons from Totness, Ashburton, and the neighbourhood, were kind enough, at my request, to come to the poor woman's place of abode, and witness the fact. But to put the matter beyond all doubt, I armed some lancets with the virus, and produced the small-pox by inoculating with it. On the 18th the infant was seized with slight convulsions, and on the morning of the 19th it expired."

The venereal poison is often communicated to the fœtus in utero through the medium of the maternal blood; and it may either be destroyed and expelled prematurely, in a flaccid putrid state, with the cuticle peeling off, or it may be born alive, covered with a syphilitic eruption, or with gonorrhœa, or purulent ophthalmia. More frequently children so infected are born in an apparently healthy condition, and the disease manifests itself in a very unequivocal manner several weeks after birth. Patches of red coppery discoloration, more or less extensive, appear over the whole surface, and desquamation of the cuticle takes place, without much or any preceding inflammation. "You will see these patches of light coppery red discoloration of the skin," observes Mr. Lawrence, "particularly large and vivid about the face, so that the child's face had a nasty scabby appearance; you observe large fissures at the corners of the mouth, aphthæ of the mucous membrane, and soreness about the eyelids; you find that the nostrils become inflamed and tender, and that a thick, viscid, yellow secretion stops up the nares, so that the child makes a kind of sniffling noise, and seems as if the respiration were impeded. When you come to examine it, you find the nostrils plugged up with thick yellow matter. In conjunction with these symptoms, you find, as you might naturally expect, that the child loses flesh, becomes shrivelled, miserably emaciated, fretful, and irritable, exhibiting marked signs of the most unfavourable constitutional affection; and, in fact, if the disease be not relieved, it very soon sinks under it." A course of chalk and mercury is requisite, and the disease often yields to this treatment if proper food be provided. Comparatively few women affected with secondary syphilis go to the full period, and the expulsion of the fœtus is usually preceded by its death. But children are sometimes born prematurely, where they appear to have been destroyed by syphilis, though the mother has never had the disease in any form, or at any period of life. This is disputed, but I have no doubt of the fact. A woman may give birth to a child which has been destroyed by syphilis, and yet she may never have had any symptom of the disease, local or constitutional. The contagion, in these cases, is conveyed by her from her husband to the child, as the contagion of small-pox is conveyed, if it is not actually introduced before; as Astruc supposes, at the time of impregnation.

When a syphilitic taint exists in either parent, the pernicious influence of the disease in destroying the fœtus may be observed in repeated pregnancies, and I believe that in the greater number of cases of organic disease of the placenta it is not inflammation, but syphilis, which produces the alteration of structure and death of the fœtus, and that the ordinary constitutional treatment of secondary syphilis with mercury and sarsaparilla should generally be employed where one or more children have died within the uterus. The most remarkable circumstance is the number of years which may have elapsed between the apparent cure of the disorder in the parents, and the manifestation of its effects upon the children. A gentleman may have been fifteen years, or longer, without any symptoms of venereal disease, his wife may be in perfect health, and yet his blood may be so tainted that all his children will die prematurely from syphilis, or exhibit unequivocal secondary symptoms of venereal disease at the time of birth or soon after. It is difficult to comprehend why Mr. Hunter should have doubted the possibility of syphilis being communicated to the fœtus in utero, or on what grounds Mr. Abernethy maintained that the fœtus in utero is unaffected by syphilis till after the sixth month.

Mauriceau has given a very full and accurate account of the symptoms and treatment of syphilis during pregnancy, and of the manner in which it originates. He knew that a child affected with syphilis could communicate the disease to a healthy nurse by suckling; and he accordingly recommends a goat to be provided for the infected child, instead of a sound woman. In a paper by Mr. Hey, on the Effects of the Venereal Disease on the Fœtus in Utero, published in the 7th vol. of the Medico-Chirurgical Transactions, the following interesting case has been recorded. In the latter end of the year 1770, and the beginning of 1771, a blind woman, who gained her living by drawing the breasts of women during their confinement, became affected with ulcers at the angles of the lips, which were judged to be venereal. I saw the ulcers, and thought them to be of that description. She had drawn the breasts of a woman who was supposed to be labouring under the venereal disease, and the ulcers did not heal till they were treated as in a case of syphilis. Several women, whose breasts were drawn by this poor woman, became infected in the manner which I shall now describe.

"Mrs. B. had her breasts drawn twice by this woman: upon the death of her second child, which died of the small-pox, and within three or four weeks afterwards, perceived a swelling of the axillary glands, and complained of soreness in her throat. She consulted the late Mr. Billam, a judicious surgeon, who assured her that the disease affecting her throat was venereal, and treated it agreeably to that opinion. During this treatment she became pregnant, but continued the use of the medicines prescribed till she arrived at the fifth month of her pregnancy. At the end of the seventh month she miscarried of a dead child. I attended her during labour, and perceived nothing amiss in the vagina or contiguous parts. She assured me that these parts had never been affected with disease, and that previously to this confinement she had borne three healthy children. She became pregnant in 1772, continued to enjoy good health, and was delivered on February 28th, 1773, of a child apparently healthy, which she herself suckled. When the child was about six weeks old, an eruption, which I judged to be syphilitic, appeared upon its legs and arms. I immediately put both the mother and child upon a mercurial course, giving the former small doses of Hydrar. Submur., and the latter Hydrar. cum Cretâ. By this treatment the child was, in a short time, freed from the eruption, but continued to take the medicine till the beginning of August. In October following two or three small ulcers appeared on the outside of the labia pudendi of the child, and on this account the mercurial course was resumed, with the addition of an occasional dose of Hydrar. Submurias. The ulcers were soon healed, but in May, 1774, the nostrils became sore, and the integuments of the nose were also tender: at the same time the voice of the child grew hoarse. The mercurial course was repeated, and continued for two months. The child also took the medicines during part of the months of September and October, after which time there was no recurrence of disease. In June, 1775, Mrs. B. bore another child, which was apparently healthy at its birth, and continued to be so for a few weeks. Blotches of a copper colour then appeared upon the skin, but soon disappeared upon having recourse to the mercurial medicines. After some time the blotches appeared again, and were accompanied by a small ulcer on the labium pudendi, as in the former case. The child was, however, completely cured by a repetition of the treatment, and remained well."

Before taking leave of the subject, I may again observe that it is requisite, in all cases of syphilis during pregnancy, whether the symptoms be primary or secondary, to give mercury and sarsaparilla, and to employ all the other means which are usually had recourse to in cases of syphilis where pregnancy does not exist. Blue pill, or chalk and mercury, are, perhaps, the best preparations which can be used. I do not know from actual observation whether mercury acts like a poison on the child, as some have asserted, and as I formerly believed. It is difficult to understand why it should poison a child in utero, and have the effect, after birth, of counteracting the poison of syphilis.

DROPSY OF THE AMNION.

The preternatural distension of the uterus by an excessive quantity of liquor amnii, in the latter months of pregnancy, forms one of the most distressing complications of the gravid state, and has not unfrequently given rise to dangerous errors in practice. In the works of the earlier writers on the diseases of pregnancy, and particularly in those of Mauriceau and Lamotte, we find cases recorded of dropsy of the uterus. Similar cases are to be met with in the writings of Baudelocque and Gardien; and these authors are the first who seem to have been acquainted with the general fact, that the fluid in this affection is contained within the cavity of the amnion. It was not, however, until the publication of M. Mercier's paper on this subject in 1809, that any attempt was made to determine the true pathology of the disease by an accurate examination of the contents of the gravid uterus. His paper contains three cases of acute dropsy of the amnion; and from the appearances observed in the fœtal membranes, he has deduced the general inference that the inordinate secretion invariably depends on inflammation of the amnion. The first case is that of a woman, æt. 30, five months pregnant, who, after being fatigued and overheated, drank a quantity of cold water, and was in consequence seized with pains in the region of the pubes and loins, cold shivering, nausea, anxiety, and cough. The pain in the lower part of the abdomen increased, and the hypogastrium became tense and swollen. On the 16th day, the abdomen being greatly enlarged, labour pains came on, and ten pints of liquor amnii were discharged, and afterwards two fœtuses, which scarcely showed any signs of life, were expelled. The fœtal surface of the amnion was partially coated with false membrane, and the amnion itself covered with bloodvessels, and of a rose-red colour.

In the second case, the infliction of an injury during pregnancy was soon followed by vomiting and lancinating pains in the hypogastric region, and pyrexia. On the tenth day after the accident, the pains having been relieved by bleeding, the abdomen began to acquire an unusual size. On the 43d day the abdomen had become enormously swollen, and the respiration was laborious. The membranes were soon after punctured with a long needle, and as the water flowed the tumefaction gradually subsided; labour pains came on the following day, and two dead children were expelled. In this case about a quarter of the fœtal surface of the amnion was inflamed, being of a deep red colour, and double the natural thickness. The third case resembled the two preceding in all essential circumstances, and the appearances observed in the amnion were nearly similar.

In 1817, Scarpa published a memoir on ascites complicated with pregnancy, but it contains no observations of importance relating to the nature of dropsy of the amnion, nor to the symptoms by which it can be distinguished from effusion of fluid into the general cavity of the abdomen.

In the last lecture I related several cases of this affection in which it was complicated with organic disease of the placenta; and in many other cases which have come under my observation, it has been combined with hydrocephalus, or some malformed or diseased condition of the fœtus, which rendered it incapable of supporting life subsequent to birth; and the same circumstance has been observed in most of the cases which have been recorded by the authors to whom I have alluded. In very few of the cases which I have seen has the formation of an excessive quantity of liquor amnii been accompanied with inflammatory and dropsical symptoms in the mother, and in none did the amnion exhibit those morbid appearances produced by inflammation which M. Mercier has described, and which led him to infer that inflammation of the amnion is the essential cause of the disease. When unconnected with a dropsical diathesis in the mother, I am disposed to consider it merely as one of the numerous diseases of the fœtus in utero which arise from constitutional disorder in the parents, and more especially from syphilis.

The diagnosis of dropsy of the amnion is most difficult in the simple form of the disease, when the effusion has taken place to a great extent, and when complicated with ascites. In both these cases fluctuation, more or less distinct, can be perceived on percussion of the abdomen; but we can obtain from this sign no positive information to enable us to determine whether the fluid be contained in the cavity of the peritoneum or amnion, or in both these membranes. In the simple form of dropsy of the amnion, where the quantity of fluid is not excessively great, the fluctuation is obscure, deep-seated, or wholly imperceptible. The presence or absence of fluctuation is, therefore, no certain test of the existence of the disease, and the only mode of arriving at a correct diagnosis, both in its simple and complicated forms, is by instituting an examination per vaginam. By this proceeding we shall not only be able to ascertain the changes in the uterus consequent on impregnation, but the accumulation of a preternatural quantity of fluid in the membranes of the ovum. This latter circumstance is known by the enlargement of the body of the uterus, by the state of its cervix, which is almost entirely obliterated, by the ballottement of the fœtus, and by the sense of fluctuation in the vagina on percussion of the abdomen.

In ascites complicated with pregnancy Scarpa has observed that the symptoms are entirely different from those of hydrops amniosis. The regular form of the fundus and body of the pregnant uterus, he states, is not evident to the touch in these cases, from the enormous distension and prominence of the hypochondria, arising from the great quantity of fluid interposed between the fundus and posterior part of the uterus and abdominal viscera. The urine is scanty and lateritious, and the thirst is constant. The abdomen, upon percussion, presents a fluctuation obscure in the hypogastric region and in the flanks, but sufficiently sensible and distinct in the hypochondria, and strong and vibratory in the left hypochondrium, between the edge of the rectus muscle and the margin of the false ribs. These symptoms, with the previous history of the patient, may afford us, in doubtful cases, some assistance in the diagnosis; but our principal dependence, as I have before said, must be placed on the information acquired by a careful examination of the state of the cervix and body of the uterus.

Having arrived at a correct diagnosis, the treatment of dropsy of the amnion becomes simple. As little or no benefit is usually derived from bloodletting, diuretics, or cathartics, the best mode of relieving the urgency of the symptoms is by puncturing the membranes, and evacuating the superabundant liquor amnii. The probe-pointed stiletted catheter, which you have already seen, is the best instrument you can employ for this purpose. In a great proportion of the cases, where this operation has been resorted to sufficiently early, it has been attended with success, and in several the life of the child preserved. In others, the spontaneous rupture of the membranes has been followed by alleviation of the symptoms, and the birth of the child The only difficulty that can arise respecting the treatment is in cases of dropsy of the amnion complicated with ascites. Even here I should recommend the evacuation of the liquor amnii as the best remedial measure that can be employed; since it relieves the leading symptoms produced by the pressure of the excess of fluid in the peritoneum and amnion on the neighbouring organs, which are, in fact, the only symptoms we have to counteract, and is followed by the expulsion of the contents of the uterus. After delivery, the effusion into the peritoneal cavity, if it depend on utero-gestation, will spontaneously disappear. If it be the effect of hepatic or other visceral disease, it may be treated by appropriate remedies.

Œdema of the feet and ankles during pregnancy is very common, and the recumbent position and gentle cathartics are the only remedies required. Sometimes the swelling extends over the whole body, and is accompanied with severe febrile and inflammatory symptoms, determination of blood to the head, and effusion of serum into the peritoneal sac, and into the cavities of the pleura and pericardium. The pulse is quick, the breathing oppressed, and the urine scanty and albuminous. Venesection and purgatives are the most important remedies in these cases of inflammatory dropsy in pregnant women; but if the symptoms are not relieved by this treatment, and especially if the dyspnœa increases, the induction of premature labour becomes necessary, and it should not be too long postponed. In some cases the secretion of urine is almost completely stopped, and diuretics and all other remedies are useless until delivery has taken place, when the kidneys immediately after begin to perform their function with the greatest activity, and the whole dropsical fluid is speedily removed.

LECTURE XX.

ON VARICOSE VEINS, MORBID SENSIBILITY AND DISPLACEMENTS OF THE GRAVID UTERUS, SYMPATHETIC AFFECTIONS OF THE BRAIN AND OF THE THORACIC AND ABDOMINAL VISCERA DURING PREGNANCY.—DURATION OF UTERO-GESTATION.

A WOMAN, in the seventh month of pergnancy, had the feet, legs, and thighs covered with great purple clusters of dilated veins which seemed ready to burst; the hemorrhoidal veins were likewise swollen and painful. A profuse hemorrhage took place from the uterus, and all the varicose veins suddenly disappeared, and they did not return, though she went nearly to the full period. This case proves that a varicose state of the veins of the lower extremity is not always produced by the mechanical pressure of the gravid uterus on the veins at the brim of the pelvis, but arises from over-distension of the vena cava and its branches, the iliac, femoral, and saphena veins. The vena cava does not enlarge during pregnancy with the spermatic and hypogastric veins, and as it has then a much larger quantity of blood to transmit to the right side of the heart than in the unimpregnated state, it is easy to explain why hemorrhoidal swellings and dilatation of the veins of the lower extremities should so often occur at all the different periods of gestation. The affection usually commences in the veins of the feet and ankles, is often confined to these parts, and is so slight that it is relieved by the recumbent position during the night, without any medical treatment. In other cases, all the branches and trunks of the saphena veins are greatly distended, and sometimes burst, or become inflamed, and thereby give rise to a partial phlegmasia dolens. In men, exposure of the limbs to cold and moisture, ulcers and external injuries over the tibia, have sometimes excited inflammation of the saphena and femoral veins, and by obstructing these vessels have produced all the phenomena usually observed in the crural phlebitis of puerperal women. From what has now been stated respecting the cause of varicose veins during pregnancy, you will readily understand the principle upon which their treatment should be conducted, and that all our remedies should be employed with the view of lessening the current of blood flowing through the vena cava. Tight bandages around the limbs, and laced stockings, will only force the blood from the branches into the trunks of the abdominal veins and cavities of the heart, and can do nothing but mischief, as experience has proved. Active saline cathartics, light diet, the recumbent position, and leeches, fomentations, and tepid saturnine lotions, to the dilated veins, when they are painful, are the safe and proper means to be employed. The same treatment may be had recourse to in painful hemorrhoidal affections occurring during pregnancy. Where the external parts become swollen, inflamed, and are affected with great irritation, besides these means it may be requisite to take blood from the arm, and give calomel and opium internally. The vagina and labia are sometimes covered with warts in the latter months of pregnancy, and there is a profuse leucorrhœal discharge. The tepid hip-bath is useful, and the black or yellow wash as a lotion, and it is advantageous, sometimes, to give mercury and sarsaparilla.

Congestion, morbid sensibility, irregular spasmodic contractions like labour pains, or fixed pains in the uterus, are experienced by many women in the latter months of pregnancy. In some cases these pains are most distressing during the day, and are readily excited by walking; in others they occur during the night, and often depend on disordered states of the digestive organs.

Fomentations and leeches to the region of the uterus, where there is fixed pain or soreness on pressure, should not be neglected, and a moderate venesection if there is excitement of the heart and arteries: where the irritation arises from a deranged state of the bowels it is often useful to exhibit a dose of calomel, and afterwards a cathartic, combined with some anodyne and carminative. Inflammation of the peritoneal coat of the uterus is rarely met with during pregnancy. Pain of the uterus, increased by pressure, rigors, quick pulse, furred tongue, sickness at stomach, are the symptoms by which it is characterised; and if bloodletting, local and general, calomel, opium, and the other remedies usually employed in puerperal peritonitis, be not vigorously used, the result will be equally unfortunate. The uterus is found, after death, imbedded in lymph and pus, and there is a copious sero-purulent effusion into the peritoneal sac. Women who have had attacks of puerperal peritonitis are more liable than other women to suffer from pains about the uterus during pregnancy; the result probably, of morbid adhesions. Spontaneous laceration of the peritoneal coat of the gravid uterus, not involving the muscular coat, has sometimes occurred, and a fatal effusion of blood has taken place into the peritoneal sac. Numerous lacerations of little depth have been observed at the posterior surface of the uterus, of the cause of which no satisfactory explanation has yet been given. In some cases, before labour has commenced, all the coats of the uterus have given way, and the fœtus and its appendages have escaped into the peritoneal cavity. Dull pain in the region of the uterus, vomiting, and fever, are the symptoms which have been observed in these cases, and have accompanied the softening of the coats. When the gravid uterus has been pierced with musket-balls or sharp instruments, escape of the liquor amnii, hemorrhage, vomiting, collapse, and death, have generally followed in a short time. There are some extraordinary cases of recovery, however, reported, where the walls of the uterus had been perforated, and the fœtus killed. Contusions, blows, and falls, are sometimes followed not only by hemorrhage and inflammation, but by immediate collapse. A woman near the full period struck her abdomen against a gate, and she remained several hours in a condition resembling that produced by violent concussion of the brain.

DISPLACEMENTS OF THE GRAVID UTERUS.

Partial and complete prolapsus may take place both in the early and latter months, but it is not a common occurrence. Before the middle period, little difficulty is experienced in restoring the uterus to its natural situation, and retaining it with a sponge or pessary. At the full period it has been found impossible. In a case which occurred to me ten years ago, the greater part of the uterus, near the full period, with the everted vagina, had escaped through the outlet of the pelvis, and it appeared at first impossible that such a mass could ever be reduced. The patient was placed upon the elbows and knees, and by long-continued gentle pressure the uterus and vagina were restored to their natural situation, and the labour was natural. In cases of partial prolapsus uteri, and procidentia of the anterior wall of the vagina and bladder, the recumbent position, and a pessary of soft sponge, are generally sufficient to afford relief.

In *this engraving* by Dr. William Hunter, you have a representation of that displacement of the gravid uterus which is called *retroversion.* The neck of the uterus is drawn up behind or above the symphysis pubis by the bladder being over distended with urine, and the fundus uteri is pushed downward and backward into the hollow of the sacrum, by which means the longitudinal axis of the uterus is placed horizontally instead of vertically in the cavity of the pelvis, and thereby produces injurious pressure on the neck of the bladder and rectum.

Retroversion of the uterus is a consequence of an undue accumulation of urine in the bladder; and, by pressing on the neck of the bladder, the retroverted uterus is a cause of retention of urine. The efforts made to empty the bladder probably contribute to produce the effect. It is an accident which generally occurs before the end of the fourth month of pregnancy; but some believe, where the pelvis is very capacious, that it may take place as late as the sixth or seventh month. In this affection there is pain and sense of bearing down in the pelvis, and the contents of the bladder and rectum cannot be evacuated. The bladder is felt distended in the hypogastrium; and if an internal examination be made, a large tumour is found occupying the hollow of the sacrum, and the os uteri is drawn up so high behind the symphysis pubis that it is difficult or impossible to reach it with the finger. The diagnosis is rendered difficult by this circumstance, that women state, what is true, that in the painful attempts to pass the urine a portion has escaped. In one case the patient reported to me that she had passed water freely, when the bladder was ready to burst. In all cases where there is the least doubt, the hypogastrium should be carefully examined, and the catheter passed. In not a few cases of protracted labour, and after delivery, women have been exposed to the utmost danger from immense accumulations of urine taking place within the bladder without being suspected.

Retroversion of the uterus may take place suddenly, the patient experiencing a sensation of the uterus altering its position in the cavity of the pelvis, and this being soon followed by the symptoms now described; or the accident may take place more slowly, and the retention of urine may not be complete, at least for some time. Where death has occurred, it has arisen either from rupture or inflammation of the bladder and peritoneum. In Dr. Hunter's fatal case, the bladder was found amazingly distended, but not ruptured. In the cases related by Mr. Lynn and Dr. Squire, the bladder was perforated. In Mr. Wilmer's case, the abdomen was greatly distended. Six pints of urine were drawn off, but the woman soon died. On inspecting the body, the bladder was found diseased, and containing a quantity of coagulated blood; and the inflammation had spread to the colon. In this case the umbilicus was protruded like half a melon, and the disease was at one time taken for hernia. The uterus was found to be so firmly wedged in the pelvis, that it could not be raised up until the symphysis was sawed away. Dr. Burns states that inflammation and gangrene of the vagina and external parts have also been produced. If the disease do not prove rapidly fatal, so much urine escapes as to prevent a speedy termination; and it occasionally happens that hectic fever is produced, the pulse becomes frequent, the body wastes, and purulent urine is voided; or the person may become œdematous, and the disease pass for dropsy. The catheter should be introduced into the bladder, and the urine drawn off, as soon as the affection is detected. The pressure of the os uteri against the inside of the symphysis may be removed by the finger being introduced, and the os uteri pushed back, that the small elastic catheter may be allowed to enter: and there are few cases in which it will not be possible to relieve the patient by drawing off the urine with the catheter. Blood should afterwards be taken from the arm to prevent inflammation, and the uterus should be left till it spontaneously resumes its natural position, which it usually does in due time if the bladder is kept empty, without mechanical means being employed for its reduction.

In some cases the uterus immediately recovers its position on the bladder being emptied. Stimulating enemata should frequently be thrown up, and all the proper local means employed to allay irritation and prevent inflammation. Gregoire and Levret had pointed out retroversion of the uterus before it had been noticed by any writer in this country, but its true nature was imperfectly understood before the publication of Dr. Hunter's essay on the subject in the fourth and fifth volumes of the London Medical Observations and Inquiries. For ascertaining the general cause and the proper mode of treatment, we are chiefly indebted to Dr. Denman, who first clearly pointed out the fact that the retention of urine is the cause, and not the consequence, of the alteration in the situation of the uterus, and that violent attempts to replace the uterus are unnecessary, and often mischievous. Retroversion of the uterus is seldom met with; not more than six cases have come under my notice in sixteen years, and they all did well. There are various other displacements of the gravid uterus, as anteversion and obliquities, which have been described by systematic writers, but these are of still more rare occurrence, occasion but little inconvenience, and require, therefore, no detailed history of their symptoms and treatment.

SYMPATHETIC AFFECTIONS OF THE BRAIN AND OF THE THORACIC AND ABDOMINAL VISCERA.

Plethora and irritation of the brain and nervous system are frequently observed during pregnancy. Cephalalgia, giddiness, insomnia, drowsiness, flushing of the countenance, disturbed vision and hearing, are the most common symptoms, and usually precede, in the latter months, those dangerous attacks of puerperal convulsions and apoplexy which are so frequently met with in practice. It is of the greatest consequence, when one or more of these symptoms are observed, that the condition of the brain and of the whole system should be carefully investigated, and the appropriate treatment be promptly applied. By cathartics and low diet relief may sometimes be obtained, but it is generally necessary to have recourse to depletion, — to abstract blood from the arm, or from the temples or nape of the neck by leeches and cupping, to remove the hair and apply cold to the head, and to use all the other means which are known to have the power of diminishing the flow of blood to the brain. In these cases it is seldom necessary to abstract large quantities of blood, either generally or locally; and if the countenance is pale and the pulse feeble, the application of leeches to the temples is all that is required. There are some cases, indeed, in which the sight is chiefly affected, — where amaurosis has taken place, with dilated pupils, or where the half of objects has only been seen, and where no relief, but rather an aggravation of the symptoms, has followed depletion. These are cases of pure nervous irritation without plethora, in which a light nutritious diet, combined with tonics and antispasmodics, are far more useful than bloodletting. Where there is much headache, drowsiness, and flushing of the face, especially in a first pregnancy, depletion is always requisite. In the attacks of hysteria which sometimes occur both in the early and latter months of pregnancy, periodical headache is a common symptom, but it generally yields to the employment of laxatives and antispasmodics, without depletion. I have seen only one case of chorea during pregnancy, which terminated unfavourably, and I feel unable to offer any remarks on similar cases. Severe attacks of toothache are often experienced by pregnant women, but no operation should be performed, however urgent the symptoms; — the pain and inflammation should be relieved by leeches to the gums, and stimulants and anodynes. Creosote sometimes does good. In a case which recently occurred, violent toothache took place, without any obvious cause, a few days before the period of quickening, and the pain ceased the instant the movements of the child were felt.

All the organic affections of the heart are aggravated during pregnancy, and sometimes prove suddenly fatal. Where they are previously known to exist, and there is much palpitation and dyspnœa, moderate depletion, saline purgatives, digitalis, and diuretics, are the principal remedies. Where dropsical effusion takes place, and great difficulty of breathing occurs, it might be justifiable to induce premature labour, but this should never be done without a regular consultation. Violent nervous affections of the heart, simulating the organic diseases of the organ, sometimes arise, and should be treated like other nervous disorders of pregnant women. Cough is one of these, which frequently harasses women during the latter months, and defies all treatment till labour takes place, and then it spontaneously ceases. Phthisis is sometimes retarded by pregnancy. The dyspnœa and other distressing symptoms are best relieved by the occasional application of leeches and blisters to the chest, and the internal use of antimonial and anodyne medicines. I have seen six or seven women die from phthisis before delivery took place.

Affections of the digestive organs occur more frequently, and produce a greater degree of suffering to pregnant women, than all the diseases which have now been described. The morning sickness is so common a symptom of pregnancy, and is experienced so slightly, that most women expect to suffer from it, and consider no medical treatment requisite. Besides obviating constipation by saline effervescing and other purgatives, the horizontal position, and light food, nothing is required. But in some women the sickness is severe and obstinate in the highest degree, and proves not only a source of discomfort, but of real danger. In the greater number of cases, in nearly all, at least at the commencement, the irritability of the stomach is the consequence of mere nervous sympathy with the uterus. Vomiting may take place during pregnancy so as to produce death, and yet there may be no trace of inflammation in the coats of the stomach, uterus, or any part of the ovum. This I know from a fatal case which occurred two years ago. M. Dance has, however, recorded two cases, where inflammation of the uterus and decidua appeared to be the cause of fatal vomiting during pregnancy. In his first case, severe vomiting without fever was followed in three months by death. The stomach was found perfectly healthy, but the deciduous membrane had been inflamed. In one part the uterus itself was remarkably soft; the chorion and the amnion were healthy; but between the uterus and decidua white false membranes were found, precisely similar to those which cover the inflamed pleura. Between the placenta and uterus was a layer of concrete pus. The second case related by M. Dance likewise proved fatal. The substance of the uterus was found unusually soft and thin, and of a violet colour, and gorged with blood. The membrana decidua, he says, participated in the disease. In cases of obstinate vomiting during pregnancy, if the epigastrium is tender on pressure, and the pulse is hard and accelerated, blood should be drawn from the arm, or, by leeches, from the pit of the stomach; and afterwards a blister applied, or a piece of linen rag, soaked in laudanum. I have seen all this done without the slightest relief; and leeches, and blisters, and anodynes, also applied to the region of the uterus; and calomel, opium, hydrocyanic acid, creosote, chalk mixture, effervescing draughts, and all other sorts of medicine, given internally, without the slightest advantage. Some women have lived for weeks in the horizontal position on a little brandy and water, or milk and lime, or soda water, and ultimately recovered, when all the remedies employed produced little or no benefit. If the vomiting is incessant, and there is great fever and emaciation, and all the different remedies have failed, the only effectual practice is to destroy the ovum, by introducing the stiletted catheter into the uterus, and puncturing the membranes. This ought not to be deferred too long, otherwise it will only hasten the fatal result. Whatever the circumstances of the patient may be, this operation must not be performed without the most mature consideration.

After what has been already stated, I do not consider it necessary to offer any further observations on the treatment of the various forms of dyspepsia in the gravid state, or to urge upon you the necessity of great attention to the diet of pregnant women, and the careful regulation of the functions of the stomach and bowels. Constipation should be obviated by mild cathartics, as oleum ricini and senna; acidity corrected by magnesia, soda water, and other alkaline substances; and spasmodic attacks allayed by stimulants and anodynes.

I shall conclude this department of the course with a few remarks on the duration of pregnancy, and then proceed to consider natural and difficult labour.

ON THE TERM OF UTERO-GESTATION.

The Roman law fixed the period of gestation at ten lunar months. The civil code of Prussia ordains that a child born 302 days after the death of the husband shall be considered legitimate. By the law of France, the legitimacy of a child cannot be called in question who is born 300 days after the death or departure of the husband. The laws of England declare that the usual period of human utero-gestation is nine calendar months, or forty weeks; farther than this they do not fix a definite period: the law is not exact as to a few days. Nine calendar months contain only 275 days, and only 273 or 272 if February be included. To fix bastardy on a child in Scotland, absence must continue till within six months of the birth, and a child born after the tenth month is accounted illegitimate.

The difficulty of determining the precise time when impregnation takes place in the human subject, renders it almost impossible, in any case, to calculate with absolute certainty the duration of pregnancy. We are, however, in possession of a sufficient number of observations to establish the fact that the ordinary period is about forty weeks, or 280 days; but it is certain that it does occasionally exceed or fall short of this period by several days. As we can never be certain of the precise day, between the periods of menstruation, when conception occurs — whether it takes place immediately after the last period, or before the expected period, or midway between these — it is obvious that all calculations founded upon the cessation of the catamenia must be extremely uncertain. The error of the calculation will be still greater if the catamenia should have appeared, or a discharge like the catamenia should have occurred once or twice after conception. Impregnation most frequently takes place soon after menstruation, but in others it does not happen till a few days before the expected period; so that two women may have menstruated at the same time, and one may have reached the full period three weeks before the other; and to this extent, or nearly so, an opinion founded on the disappearance of the catamenia may be erroneous.

Calculations of the duration of pregnancy, founded upon what has been observed to occur after casual intercourse, or perhaps a single act, in individuals who can have no motive to tell us what is false, are likely to be much more correct; and the conclusion to be drawn from these is, that labour usually, but not invariably, comes on about 280 days after conception, a mature child being sometimes born before the expiration of forty weeks, and at other times not until the forty weeks have been exceeded by several days. A case came under my observation very lately, in which I had no doubt the pregnancy existed 287 days: the labour did not take place till 287 days had elapsed from the departure of the husband of this lady for the East Indies. Some women are always delivered before the end of the forty weeks, according to the usual calculation, and their children are mature.

I received a letter in February, 1842, from Dr. J. C. Hall, of Bawtry, in which he stated a very curious fact, and one which I am not aware had been previously pointed out, viz., that the duration of pregnancy in the cow is influenced by the male. In 726 cases, he found that with other males the time of gestation was 284 and 285 days, and that all the cows impregnated by another male belonging to Lord Spencer went five or six days longer.

In the evidence given on the Gardner Peerage cause, the period of utero-gestation was limited, but not strictly, by some of the witnesses, to forty weeks, or 280 days; by others it was extended to 311 days. Dr. Merriman, whose opinion is always entitled to much respect, thinks the greatest number of women complete gestation in the 40th week, and next to that in the 41st. Of 114 pregnancies, calculated by him from the last day of menstruation, and in which the children appeared to be mature, 3 deliveries took place at the end of the 37th week; 13 in the 38th; 14 in the 39th; 33 in the 40th; 22 in the 41st; 15 in the 42d; 10 in the 43d; and 4 in the 44th week.

How long before the expiration of the 40 weeks a child may be born with the power of supporting life has not been determined. Where I have induced premature labour for distortion of the pelvis before the end of the seventh calendar month from the last menstruation, I have never seen a child reared. The lady of the clergyman in Fife, whose case has lately given rise to so much discussion, was delivered 175 days after marriage, and the child lived five months. To what extent gestation may be protracted in some cases beyond the 280 days it is very difficult to determine, and the opinions of the most eminent writers differ upon the subject. I should suspect some great error in the calculation where the period of gestation exceeded 300 days. But the experiments made on the lower animals prove that there exists in them a great variation between the shortest and the longest gestation ; and it is difficult to comprehend why there should be a difference in this respect in the human species.

Mons. Tessier made observations on 2136 animals, besides those on incubation, viz., 579 cows, 447 mares, 161 rabbits, 28 sows, 912 sheep, 2 asses, 8 buffaloes, 4 bitches. Of the 577 cows, whose period of gestation is the same as in the human species, 234 calved before the 280th day ; 331 between the 280th and the 299th day ; and 10 between the 300th and the 321st day. The difference between the longest and the shortest period was 81 days ; and the greatest extension amounted to 41 days beyond 280.

Of the 447 mares, whose period of pregnancy is 11 months; 405 foaled between the 329th and the 359th day ; 35 from the 359th to the 377th ; and 7 between this and the 419th day. The difference between the extremes being 129 days, and the greatest protraction 84 days. The greatest variation in the 912 sheep was 11 days, and the extreme protraction 6 days. In the rabbit, whose natural period is 1 month, the difference was 8 days. Of 912 sheep, whose natural period of gestation is 5 months, or about 151 days, 282 yeaned from the 146th day to the 150th = 334 from the 150th to the 153d ; 84 from the 153d to the 155th ; 7 on the 156th day ; 5 on the 157th. The greatest variation being 11 days.

In the next lecture we shall proceed to consider the Symptoms and Treatment of Natural Labour.

LECTURE XXI.

ON THE SYMPTOMS AND TREATMENT OF NATURAL LABOUR.

When the fœtus has completed the period of its existence in the uterus, it can live no longer in the same condition, and the great nervous and muscular structures of the organ, which have lain dormant during pregnancy, are suddenly roused into action in consequence of the stimulus imparted to them by the mature fœtus, and the whole contents of the uterus are expelled. This process, which is always attended with pain and danger, is called *labour*, *delivery*, or *parturition;* all the varieties and complications of which have been arranged by Smellie and Denman in a regular systematic manner, under the four following heads: —

1. *Natural labour*, in which the head of the fœtus presents or comes first, and the delivery is accomplished in twenty-four hours, by the natural contractions of the uterus and the assistance commonly given.

2. *Lingering*, *tedious*, *protracted*, and *difficult labour*, in which the head of the fœtus likewise presents, but the labour continues upwards of twenty-four hours, and some unusual assistance is required. Irregular uterine action, nervous exhaustion, rigidity of the parts, cicatrices of the vagina, tumours of various kinds within the pelvis, and distortion of the pelvis, and unfavourable position of the fœtal head, are the most common causes of the difficulty experienced in the cases referred to this class, and which terminate either without manual or instrumental assistance after unusual suffering, or by the employment of the forceps or perforator.

3. *Preternatural labour*, where the nates, the inferior or superior extremities, present; or the umbilical cord is prolapsed; or there is a plurality of children.

4. *Complicated labour*, in which some dangerous accident occurs, unconnected with the presentation of the fœtus; as uterine hemorrhage, retention of the placenta, inversion or rupture of the uterus, puerperal convulsions.

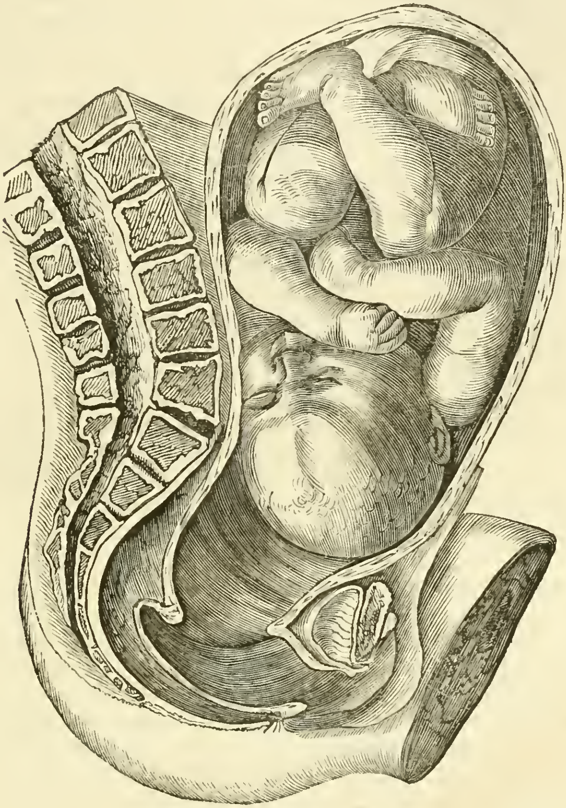
This classification of labours is both natural and artificial; and for all practical purposes it is the best which has yet been proposed.

I. — OF THE SYMPTOMS AND TREATMENT OF NATURAL LABOUR.

In natural labour the head of the fœtus presents, and the delivery is generally completed in twenty-four hours, and no artificial assistance is required. In every case the os uteri, vagina, and external parts, are dilated, the membranes ruptured, the child expelled, and the placenta and membranes separated and forced from the uterus. The dilatation of the os uteri, rupture of the membranes, and escape of the liquor amnii, take place in the first stage of labour. When the os uteri is fully dilated, and the head has passed through it, the first stage of labour is completed. The entire expulsion of the head, trunk, and extremities of the child, is effected in the second stage of labour; and in the third stage the placenta and membranes are detached from the inner surface of the uterus, and completely expelled both from the uterus and vagina. In the greater number of cases, before the first stage of labour has been fully completed, the second has commenced and made some progress; and it is not unusual for the head to descend through the brim and cavity to the outlet of the pelvis, and begin to press upon the external parts, before the complete dilatation of the os uteri has been effected.

For several days before labour supervenes there are often certain symptoms observed, which have been called the precursory or premonitory symptoms of labour. The first and most striking of these is a subsidence or sinking down of the uterus. The epigastric region, in consequence of this, becomes less distended, respiration is performed with greater ease, and the patient feels herself more comfortable, and more disposed and able to exert herself than she had been for some time before. This sinking down of the uterus is not from a mechanical cause, but from relaxation of the parts, and is often observed in the lower animals before parturition.

Fig. 40.*



A sensation of weight in the inferior part of the pelvis and in the region of the uterus, and irritation of the bladder and rectum, often accompany this subsidence of the uterus. Not only do the parts become soft and relaxed, but in some women, before any pains of labour are experienced, there is a mucous discharge from the vagina tinged with blood, arising from the dilatation of the orifice of the uterus, and the separation of the membranes. Some women suffer for a week or more before labour begins from sleeplessness at night, irregular pains about the uterus, and a peculiar nervous irritability. Some have at the first a sharp pain or uterine contraction, in a few hours another, and a few more after long intervals; whilst in others, without pains, the membranes are ruptured, and the liquor amnii escapes. These pains are sometimes experienced fifteen or twenty hours before the commencement of regular uterine action. They are then slight, produce little effect upon the constitution, and come at intervals of a quarter or half an hour, the intervals gradually becoming shorter, and the uterine contractions stronger. During these periodical pains the os uteri is opened, and its margin becomes tense and stretched, and a slight degree of pressure is felt on the extremity of the finger, if an examination be made. As soon as the pain or uterine contraction subsides, this state of tension or stretching of the lips of the orifice of the uterus ceases, and the orifice itself again closes. The membranes are put upon the stretch also during the pains; but at first they do not protrude through the orifice. Gradually, these pains, which are often called cutting or grinding, become more and more severe, continue longer, recur at shorter intervals, and leave a certain degree of uneasiness when they are absent; and each pain is sometimes preceded by a slight tremor or shivering; and sickness, vomiting, restlessness, impatience and despondency, are often present during the whole of the first stage of labour. The action of the heart and arteries becomes increased, the skin hot, and the countenance flushed. The tone of the voice is peculiar in the first stage of labour. As the dilatation of the os uteri advances, the membranes enter into it during each pain, and its margin becomes softer and thinner, and the head of the child at the same time usually passes down through the brim, and occupies a considerable portion of the cavity of the pelvis. The os uteri becomes at last wholly effaced, and the head of the infant passes through it into the vagina. In most cases the membranes are now ruptured, if they have not previously given way, and the liquor amnii escapes. At other times the membranes are not only pressed into the vagina, but through its orifice upon the external parts, which they assist in dilating. After the rupture of the membranes a short interval of freedom from pain often ensues, and then they become much more acute and severe, and are accompanied with a strong desire to bear down. But there is often great irregularity in the strength, duration, and intervals of the pains. In some women, without any apparent cause, they disappear altogether for a considerable time, and several hours of sleep will follow. Even between the strong expelling pains in the second stage of labour, some go to sleep, and the pains are absent for a considerable period. The duration of the first stage of labour varies very much in different cases. In some it is completed by a few pains; in others, many hours of severe suffering are required to effect the expulsion of the head through the os uteri. The dilatation usually goes on much more slowly in first than in subsequent labours, and in persons advanced in life than in those who are under thirty years of age. This difference depends fully as much on the condition of the os uteri as on the strength of the uterine contractions. In some it is thin, soft, and dilatable, at the commencement of labour; in others thick, rigid, high up, and inclined backward or laterally.

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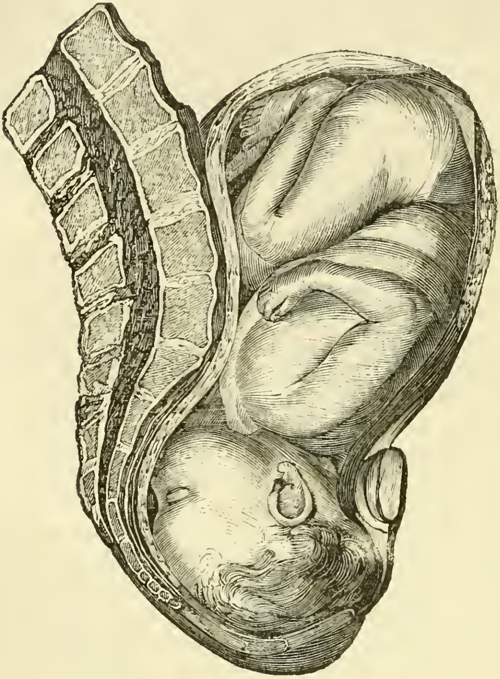
* Fig. 40 represents the progress of the first stage of labour.

In the second stage of labour the same phenomena are observed as in the first, but in a much more striking degree. The uterine contractions are much more violent, the patient fills the chest with air, closes the glottis to prevent its escape, involuntarily grasps any object near her, and forcibly bears down. The greater part of the head of the child is now in the cavity of the pelvis, and it is forced upon the perineum during each pain. The head most frequently lies obliquely or diagonally in the pelvis, with the occiput directed to the left acetabulum, and the forehead to the right sacro-iliac symphysis, the vertex being the most dependent part. When the membranes are ruptured, the pressure upon the head, during the pain, causes the integuments to become wrinkled, the parietal bones overlap one another, and, if the external parts are rigid and the labour is protracted, a tumour is formed under the scalp from blood being effused into the loose cellular membrane between the bones and integuments. At each succeeding pain the head presses against the parts at the outlet of the pelvis, and pushes them before it. The parts are gradually dilated, and, the head turning round, the occiput is forced out between the labia. The perineum is carried forward by the pressure of the head, and becomes thin and distended. When the pain subsides the head recedes, and, the distension of the perineum being removed, the external parts resume their natural appearance. On the return of pain the head is forced still lower down, the perineum is again put upon the stretch, and to a still greater degree. The anus projects, dilates, and the contents of the rectum escape. The sufferings endured at this period are usually most intense, and the patient expresses the acuteness of her pangs by loud cries, sufficient, sometimes, to make the ears ring, or by deep, stifled, or suppressed groans. If we may judge from appearances, the suffering endured in some cases of labour is equal to what is experienced by those individuals who undergo severe surgical operations, or have the most violent cramps in muscular parts. In other cases the pain endured is trifling, and of such short duration that it is soon forgotten. At last, the head of the child, greatly compressed and swollen if it is a first labour, and there is much resistance at the outlet of the pelvis, is partially forced through the external parts, and does not recede

[Fig 41.*



when the pains go off. There is then usually in no long time a succession of strong expelling pains experienced, accompanied with involuntar efforts to bear down, by which the perineum is stretched to the greatest degree; at last it slides back over the forehead and face of the child, and allows the whole head to escape. The time required for the dilatation of the perineum varies extremely in different cases: in first labours the head often presses upon it for several hours before this is effected, while in other cases only a few pains are required.

After the expulsion of the head, if the mucus in the mouth be cleared away, respiration soon commences, and the child goes on breathing regularly until another pain is experienced, which expels the shoulders and body of the child through the outlet of the pelvis. At other times, and more generally, there is an interval of a minute or two, or still longer, between the pains, and when the uterine contractions are renewed, the occiput usually becomes inclined to the left thigh of the mother, while the chin is turned to the opposite side. The shoulders then pass out of the pelvis, one under the arch of the pubes, and the other along the hollow of the sacrum, during which time the perineum is often again so much stretched as to be in danger of laceration. The transition is sudden from a state of the most intense suffering and anxiety to one of freedom from almost all pain, and the patient is left in a state of great excitement or exhaustion, with a rapid pulse, flushed countenance, and profuse perspiration over the whole body.

After a longer or shorter interval the uterus again contracts, and expels the placenta, fœtal membranes, and the coagula of blood formed within its cavity. In general the placenta is only partially or not at all detached from the uterus before the birth of the child. The same pain which expelled the child sometimes expels the placenta, but more frequently several minutes elapse, and sometimes half an hour or longer, before the contractions of the uterus are renewed, and the placenta descends through the orifice into the vagina. If slight traction be made upon the cord downward and backward, a few pains are usually sufficient for the entire exclusion of the placenta and membranes.

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* Fig. 41, represents the first stage of labour completed.

If no assistance is given, the uterus usually moulds the afterbirth into a cylindrical form, and gradually forces it through the orifice into the dilated vagina, where it may remain a considerable period, until its presence excites the action of the diaphragm and abdominal muscles. Blood in greater or smaller quantity, fluid and coagulated, continues for some hours to flow from the parts. The uterus, after it has been emptied of its contents, and has properly contracted, forms a round hard tumour like a cricket-ball in the hypogastrium. It often, however, for several hours, or even longer in women who have had many children, alternately contracts and relaxes; and, if the labour is protracted, it is painful on pressure, and prone to inflammation. In the course of a few days the sanguineous fluid which flowed from the exposed vessels of the uterus where the placenta had adhered assumes a greenish hue, and, at a later period, it has sometimes a milky or purulent appearance, and has a peculiar odour. This discharge from the uterus after delivery, called the lochial discharge, does not usually cease altogether until the uterus has contracted greatly, and become much reduced in volume by the absorption of its coats, bloodvessels, and nerves. The uterus is much more rapidly absorbed in some women than in others, and this chiefly depends on the previous state of the patient's health and the nature of the labour. In some women the pulse returns to the natural standard, and the exhaustion disappears quickly; in others, without any disease, the pulse continues rapid for several days, with considerable general febrile excitement. The secretion of milk occasionally commences immediately after delivery, but generally not till the second or third day. Such is a very general description of the phenomena most frequently observed in the progress of natural labours, and I now proceed to consider the treatment required in their different stages.

TREATMENT OF NATURAL LABOUR.

The first circumstance to be attended to, when we have been engaged to take charge of a patient in her confinement, is that when sent for we are to proceed as expeditiously as possible to her assistance. We are frequently summoned at the very commencement of labour, or when the pains experienced are false or spurious, but this affords no ground for unnecessary delay in any case, for the whole process of delivery is not unfrequently completed in a short space of time, and with a few pains, and if we are not present fatal accidents may occur. Where the superior extremities present, or the umbilical cord surrounds the neck of the infant, or uterine hemorrhage occurs, the favourable opportunity for operating may be lost, and the mother and child be both sacrificed by unnecessary delay on the part of the medical attendant. Independently of the actual good we may do by immediately proceeding to the assistance of patients when summoned, their confidence in us is deservedly increased by a proper display of activity on our part, and by showing that we sympathise with them in their sufferings, and are resolved to do whatever lies in our power to avert the danger to which they are exposed. It is far from my wish to recommend you to practise any unworthy art, to affect an interest in their welfare which you do not feel, to gain the confidence and esteem of your patients; but I would urge you to employ all proper means to acquire their confidence, for without it you will find that it is impossible to conduct any case of midwifery to a satisfactory termination.

Though we should proceed without loss of time to the assistance of our patients in labour, yet we shall do harm if we propose immediately, in an abrupt manner, to ascertain the progress of the labour by an internal examination. No impatience ought to be manifested, or any inquiries made respecting the state of the different functions which could possibly offend their delicacy. No woman's feelings can be hurt by inquiring when the pains commenced — if they came on spontaneously — how often they continue — if they begin in the back and come round to the front of the abdomen — and if they are accompanied with shivering and sickness, or a sensation of bearing down. By the answers given to these inquiries, and by the appearance of the countenance during the pains, we are sometimes able to form a tolerably correct judgment of the state of the case, though we cannot be absolutely certain that labour has actually commenced, and can give no positive opinion on the subject, until we have been permitted to ascertain the state of the os uteri, or to take a pain, as nurses express it. However strong the pains may be, however regular in their recurrence, they may be false or spurious pains, and we cannot determine their true character if the patient does not allow us to make the proper investigation. Where it is a first child, and the patient feels an unusual dread of an internal examination, the hand may be applied to the abdomen to feel if the uterus becomes hard during a pain, and if so there is the greatest probability that labour has commenced. But, under such circumstances, until the pains have continued so long, and have occurred so frequently and with such force as to lead us to believe that the os uteri is considerably dilated, it is better, perhaps, to wait for a few hours to observe the progress of the symptoms than to urge the patient to submit to an immediate examination. Indeed, the proposal to ascertain the state of the case must not be made directly to the patient, but to the nurse, who, if experienced, will only require a hint, and will find no difficulty in obtaining the requisite consent;

every woman being naturally anxious at the commencement of labour to know if she is safe, and if the infant is coming in the usual way. When the consent of the patient has been obtained, let her lie down near the edge or foot of the bed, on her left side, under the sheet or coverlet, with the knees drawn up to the abdomen, and when a pain comes on, let the fore finger of the right hand, covered with cold cream, lard, soap, or some other unctuous matter, be gently passed from the anus along the perinæum into the vagina, and forward along its posterior surface, as far as the finger can reach. The point should then be drawn forward to the centre of the brim of the pelvis, where the os uteri is most frequently situated, or a little behind this, at the commencement of labour. You cannot fail to reach the os uteri if the finger be passed up along the posterior wall of the vagina, and the point of it be brought forward towards the symphysis pubis. While the pain continues, the most careful examination should be made to ascertain the degree to which the orifice is dilated, the effect produced upon it by the pain, and whether it is thin, soft, and yielding, and low in the pelvis, or high up, thick, rigid, and unyielding. During the pain, we have to ascertain whether the labour has commenced, and if so, the extent to which the os uteri is dilated, and from its condition endeavour to determine the probable duration of the labour. When the pain has subsided, and the os uteri and membranes have collapsed, and not before, the finger is to be passed very cautiously within the orifice, to discover whether the head of the child presents. The head is usually recognized without difficulty by its globular shape, the peculiar hardness of the parietal bones, and by the sutures. If the finger touches the sagittal suture, midway between the fontanelles, the edges of the parietal bones will be distinctly felt through the membranes. If you feel the hard edges of the parietal bones, you can have no doubt about the presentation, although neither fontanelle be touched. In no case is it necessary or proper at the commencement of the labour, before the membranes are ruptured, and the first stage completed, to endeavour to discover in what position the head of the child is placed relatively to the pelvis of the mother ; it is enough to know with absolute certainty that the head presents; and this information should be possessed in every case ; no doubt should be left on the subject, before the finger be withdrawn. Having ascertained that the pains are those of labour, and that the head presents, we have obtained all the knowledge that can ever be of use in practice. Any attempt to determine in which of the numerous positions described by some authors the head is placed at the brim of the pelvis, would only endanger the rupture of the membranes, and disturb the regular order observed by nature in the process. I am greatly at a loss to discover what benefit could result from knowing during the first stage of labour, provided you can touch the vertex with the point of the finger, in which of the six or eight positions of Baudelocque, and other foreign authors, the head is placed. The importance attached by some writers to a knowledge of these positions, some of which are wholly imaginary, has probably arisen from the dangerous practice of employing the long forceps before the os uteri is fully dilated, and before the head has passed into the cavity of the pelvis. At this early stage of labour no instrument of this description can be safely used, and if the operation of turning the child were required, the position of the head would have no influence upon the method we would adopt in turning the child. Be sure that the head presents before you state this to the nurse or patient, for they will not soon forget your mistake if it should turn out to be a case of nates presentation.

In some cases where the head presents, it remains so high up, even when the first stage of labour is considerably advanced, that the finger cannot reach it without endangering the rupture of the membranes. Here the patient should be kept in a horizontal position, till the first stage of labour is nearly completed, and the presentation ascertained.

When it is the first labour, and the os uteri is high up in the pelvis, rigid, and little dilated, and the pains are irregular and produce little effect upon it, we infer that many hours will elapse before the labour is completed. As sudden and unexpected changes, however, often occur in the progress of labour, it is necessary to be extremely cautious, both in forming and delivering an opinion respecting its duration in every case. Even when the os uteri is widely dilated, its margin thin and soft, and the pains strong and regular, circumstances which could not have been foreseen may occur to retard delivery many hours beyond the time we expected. The assurance that the labour is natural, that the child is coming as it ought to do, that it is not a cross birth, which all women dread so much, and that there is every reason to expect in due time a successful termination of the labour by the natural efforts, is sufficient to satisfy every woman possessed of ordinary fortitude and intelligence. But there are some resolute enough in ordinary circumstances whose courage leaves them entirely during labour, and who require not only to be assured again and again that there is no danger but to be convinced, by our cheerful and composed demeanour, that such is the fact.

I ought to have stated before, that if, on making an internal examination, we find no change produced on the os uteri during the pains, we conclude that the labour has not commenced, and endeavour to discover and remove the cause of the irritation. False or spurious pains are usually vague and irregular, and never cease entirely. They often follow strong exercise, or fatigue from walking, and irregularities of diet, and occur before the full period. There is sometimes tenderness of the uterine region, and febrile excitement. They are to be relieved by opiates, warm fomentations, cathartics, and bleeding, according to the cause on which they depend.

During the first stage of labour the proper arrangements in the dress of the patient, the bed, and apartment, should be made for delivery. The stays, and everything that can compress the body during the strong muscular efforts, should be removed, and a night-wrapper or loose dressing-gown put on. The mattress should be laid over the feather-bed; and over the dressed sheep's skin or water-proof cloth, a blanket should be laid, and this covered by a folded sheet. According to the temperature of the atmosphere at the time, a blanket or coverlet should be placed over the patient when she lies down. The feet are usually pressed against one of the bed-posts during the pains, as she lies on the left side, and a long towel fixed to the other or foot of the bed, on which she can pull when the uterine action is strong. The apartment should be kept moderately warm, and well-ventilated, during the whole period of labour; and the food and drink should consist of tea, gruel, coffee, barley-water, toast and water, and other diluents. It is only when labour is protracted, and exhaustion takes place, that broth or beef-tea is required, and that a little wine, and water, or brandy and water, should be given. If the bowels are confined when labour begins, give a sufficient dose of castor oil, or let a stimulating enema be exhibited. Until the first stage of labour is nearly completed, the patient should be allowed to sit up, to lie down, or walk about and change her position, as she may feel inclined. Even in the second stage of labour, if it is the first child, and the parts at the outlet of the pelvis are rigid, it is often useful to keep the patient for a time out of the recumbent position. Nurses often request them to bear down in the first stage; but this exhausts the strength, and voluntary exertions should never be made at any period of labour. The circumstances of each case will enable us to judge whether it is requisite for us to remain in constant attendance, or if we may with safety absent ourselves altogether for a few hours, and attend to other professional business. Our constant presence in the apartment is rather injurious than beneficial in most cases until the first stage of labour is nearly completed, and the pains are strong and frequent. If the labour is protracted, it is necessary from time to time, at intervals probably of two or three hours or longer, to repeat the internal examination, that its progress may be ascertained. Women are anxious to know that the labour is advancing, and they are aware that this can only be done by an internal examination, which, if properly conducted, can neither excite inflammation of the vagina nor produce any other injurious effect; at least I have never seen inflammation of the vagina nor laceration of the perineum where I could fairly attribute them to this cause. It is scarcely necessary for me to point out to you the necessity of examining the hypogastrium from time to time, to be sure that there is no accumulation of urine taking place in the bladder. In all protracted cases there is no circumstance which requires greater attention than this, and the immediate employment of the catheter when the necessity for it arises.

It is always requisite to make a careful internal examination when the membranes burst and the liquor amnii begins to escape, as a loop of the navel-string may descend before the head, or an upper extremity accompany it. The membranes should not be ruptured artificially, and no attempt should be made to dilate the orifice of the uterus or the external parts, in ordinary circumstances. When the head of the child comes to press forcibly against the perineum, and it is greatly distended and in danger of being lacerated, the patient should then be placed on the left side in bed, or rather before this period, and should not quit that position for an instant. The left side is by far the most convenient position both for the patient and her medical attendant, and it is so not only in natural labour but in all cases where the forceps or perforator are to be employed, or the operation of turning performed. The palm of the right hand, with a soft napkin interposed, should be firmly applied over the centre of the perineum, and proper support given during the pains. In first labours, where the head is large and the perineum rigid, and the uterine contractions violent, the parts at the outlet of the pelvis are often extensively torn where this artificial support is not given effectually. Extensive laceration of the perineum very rarely occurs where the necessary assistance is afforded with the palm of the right hand placed over it, and strong counter-pressure made during the pains. By counter-pressure is meant, pressing the head forward to the symphysis pubis, and preventing the whole force of the uterine action being directed against the perineum. It is sometimes requisite to guard the perineum thus for several hours, and, where it is exposed to great danger, it is useful occasionally to cover it with some unctuous matter, or still better, between the pains, to apply over it a large sponge soaked in hot water. Nothing should be interposed between the hand and perineum when it is in great danger of being torn. The right knee should be supported when the head is thus pressing upon the parts at the outlet of the pelvis, and the patient strongly urged to abstain from all voluntary efforts to bear down.

When the head is passed, clear away all the mucus in the mouth, that the child may breathe, and feel whether the umbilical cord surrounds the neck. If it does, and is not tight, the best practice is to leave it alone, or slide it up a little over the shoulders when a pain comes on, that they and the body may pass readily through the loop. I prefer doing this, or merely slackening it a little, to pulling the loop entirely over the head, which is sometimes done. If there is no pain to expel the trunk soon after the head is born, make firm pressure over the fundus uteri, and excite it to contract. The child should never be dragged into the world, but the uterus should always be made to expel it: even if several minutes should elapse without any pain occurring, I would not pull the child forward, but wait until it was forced into the world by the action of the uterus. It is of the greatest consequence that the uterus should not be suddenly emptied of its contents. When the shoulders are passing, the perineum should be again supported: then draw the child into the light, and if it has breathed freely and vigorously, apply a good strong ligature very firmly around the cord, about two fingers' breadth from the navel. This ligature should be applied with as much care as around a large divided artery, and to make it perfectly secure, pass it twice around the cord, and tie it firmly. Apply another ligature an inch or two nearer the placenta, and divide the funis between the ligatures with a pair of scissors, put the child in the flannel receiver, and give it to the nurse. If the respiration is not readily established, recourse must be had in the first instance, before applying the ligatures, to the dashing or sprinkling of cold water over the face and chest, rubbing the chest with brandy, and the application of stimulants to the nostrils. Immersion of the child in warm water, and inflating the lungs, should be employed, and our efforts to excite respiration should not cease until the pulsations in the heart and funis have entirely ceased for some minutes. When this is the case, all our efforts to restore animation will be useless.

Next ascertain, by applying the hand over the abdomen, if there be another child within the uterus. If there be a second child, the fundus of the uterus will still be in the epigastrium; it will be large and hard, and some part of the child distinctly felt. If there is a doubt about the presence of a second child within the uterus, examine internally, and the second bag of membranes and presenting part, if there are twins, will be distinctly felt. If this could not be ascertained by passing two fingers of the right hand along the cord of the first child, it would be justifiable to introduce the whole hand into the vagina.

I have several times been sent for to deliver a second child when there was nothing within the uterus but an unusually large placenta. When there is not a second child, the fundus uteri is usually felt nearly as low as the umbilicus, and it is greatly reduced in size, and has none of the irregular hardness which is always felt in cases of twins.

The temporary binder, to which I attach the greatest importance, should now be applied firmly around the abdomen. In all cases of labour, immediately after the birth of the child, a broad bandage should be applied around the body. A broad towel or napkin is often employed for this purpose, and, without raising the patient, it may be passed under her, and spread out so as to surround the whole pelvis and abdomen, and firmly fixed with tapes or strong pins. It should be so tightly applied around the lower part of the abdomen as to occasion a slight degree of uneasiness. The firm equal pressure of the binder or bandage over the uterus causes it to contract in a regular manner, and diminishes greatly the risk of syncope, retained placenta, and hemorrhage. Some have attributed inflammation of the uterus after delivery, and prolapsus, and a great many other evil consequences, to the temporary binder, but, as you may suppose, without the slightest proof or foundation. Some practitioners apply a binder exterior to the clothes at the commencement of labour, and tighten it as the process advances. Even in the eighth month of pregnancy, where there is great relaxation of the abdominal parietes, it might sometimes be proper to give gentle support to the pendulous abdomen with a bandage.

Our great object now is to make the uterus permanently contract, to detach and expel the placenta, and prevent hemorrhage. For this purpose, if the labour has been tedious, and there is much exhaustion, some stimulant, as a little wine and water, or brandy and water, should be administered; and over the binder, if the uterus is relaxed, and indisposed to contract, the hand should be placed, and firm pressure made. When a pain is felt, slight traction in the direction of the axis of the brim of the pelvis, downward and backward, should be made upon the cord, to promote the separation of the placenta from the uterus. By compressing and squeezing the fundus uteri, and gently pulling from time to time on the cord, the placenta usually descends, and passes through the os uteri into the vagina, in the course of a quarter of an hour, or twenty minutes, or half an hour, after the birth of the child. More anxiety is often felt by us during this period than during the whole of the previous stages of the labour, and not without good reason. In removing the placenta from the vagina, it is necessary to be very careful that the membranes are not torn away from its margin, and left behind. The best method of obviating this accident is slowly to turn the placenta round twice or thrice as we extract it, and if the membranes seem disposed to tear, as we gently draw them out, to seize them with a dry napkin, and very gradually remove them. The placenta may be retained beyond the usual period, by want of uterine action, by morbid adhesion to the uterus, and by premature contraction of the cervix. On whatever cause it depends, there are no cases in which the placenta ought to be permitted to remain within the uterus beyond an hour after the birth of the child, and not so long if hemorrhage takes place. That there may be no misunderstanding upon this important practical point, I repeat, that I have never seen a case of retention of the placenta where anything but mischief resulted from leaving it within the uterus beyond an hour after the expulsion of the child. If the binder has been applied, and pressure made over the fundus uteri, and traction upon the cord properly employed, and the placenta does not descend at the end of an hour, I would not advise you to give the ergot of rye, or to wait longer for its detachment and expulsion, but to put the cord upon the stretch with your left hand, and to introduce your right hand in a conical form, through the vagina into the uterus, to spread out the fingers to the circumference of the placenta, and to press the mass slowly from the uterus if it still adheres, and to extract it. In the greater number of cases the placenta has been completely or partially detached from the uterus when this requires to be done.

When the placenta has come away, or been removed, make the patient dry and comfortable, by removing all the wet clothes, and applying warm napkins to the external parts and around the pelvis, and giving her warm gruel, with a little wine or brandy, or some warm tea. As hemorrhage may occur an hour or more after delivery, you should from time to time feel the pulse, inquire if the patient is faint, ascertain if the uterus is contracted, and if the discharge is not too great. It is a good rule to remain with every patient at least an hour after the expulsion of the placenta, and if there is faintness, and a disposition to flooding, it is necessary to dovote a much longer time to the case.

If severe after-pains soon commence, or if they have occasioned much suffering in former labours, it is useful to administer a draught, with 30 or 40 minims of the Liquor Opii Sedativus. I am an advocate for an opiate after delivery, to soothe the nervous system, if much excited by severe and protracted suffering. If opium be useful in tranquillizing the system, and preserving it from febrile excitement and irritation after extensive wounds of the large cavities, surely it cannot but be beneficial after delivery, and it can do no harm, particularly if combined with a saline diaphoretic draught. Where a labour has been severe, and inflammation of the uterus is to be dreaded, it is not only useful to administer a sufficient quantity of an anodyne to quiet the system, but for a day or two to give small doses of Dover's powder, to subdue irritation, and promote perspiration. It is beneficial, also, under such circumstances, to cover the hypogastrium with a warm poultice, or occasionally to apply warm fomentations.

Three or four hours ought in all cases to be allowed to pass, after the labour is concluded, before the patient is moved up in the bed, and has her clothes changed, and when this is being done by the nurse, she ought to make no exertion, or to quit the horizontal position. The apartment should be kept moderately warm, and free from all noise and excitement of every kind, and nothing should be given but gruel, tea, or barley water, for forty-eight or sixty hours, in the majority of cases.

With respect to the infant, it is necessary to see before quitting the house that it is not malformed, that the cord is properly secured, that it is not unnecessarily exposed to cold air while being washed by the nurse, and that no improper food or medicine is administered. A small teaspoonful of castor oil may be given to expel the meconium. A little warm milk and water or thin gruel, is the only food that is required before applying the child to the breast, which should not be done for at least twelve hours after delivery. Every patient should be seen by her medical attendant within twenty-four hours after delivery, and if possible daily, at least for a week after. The danger of child-bearing may now almost be said to commence, for there are very many women who pass through the different stages of labour with impunity, who perish in the puerperal state. Inflammation of the uterus and its appendages is the cause of all the danger, and in the daily visits which you make, this is the great point to which your attention should be directed. Pain, increased by pressure over the hypogastrium, suppression of the lochia and milk, rigors, headache, and quick pulse, are the principal diagnostic symptoms. It most frequently commences on the second and third day after delivery, but sometimes within twenty-four hours.

At each daily visit pass the hand over the region of the uterus, press upon the fundus and over the situation of the uterine appendages, and you will sometimes detect uterine inflammation where the complaints of the patient and the statements of the nurse would have given you no reason to suspect its existence. Examine the state of the bladder, the pulse, tongue, lochial discharge, and mark the expression of the countenance, and never fail to inquire if there is milk in the breasts, and if the patient has had any coldness or shivering, or is suffering from headache. If the pulse continues several days after delivery 100 or 110 in the minute, and one or more of these symptoms are present, the patient is not safe.

It is of the utmost importance to form a correct diagnosis between after-pains and uterine inflammation. Many women are lost in consequence of this mistake. Generally there are intervals of complete freedom from suffering in the irrgular contractions of the uterus which follow delivery, without inflammation, and constitute after-pains; they are relieved by pressure over the uterus: they gradually diminish in severity on the second and third days, and they are unaccompanied with rigors, fever, and headache, and the lochial discharge is not suppressed. But if you cannot satisfactorily establish the diagnosis between after-pains and inflammation of the uterus, I would take the least favourable view of the symptoms, and give the patient the benefit of a small general bleeding, or the application of leeches to the region of the uterus. I have seen many puerperal women die for want of timely depletion; I never saw one suffer in consequence of a moderate quantity of blood being taken from the arm, or from the hypogastrium by leeches.

On the third morning after delivery it is necessary in most cases to administer a mild cathartic: castor-oil, or an aperient draught of infusion of senna, sulphate of magnesia and manna, should be given, and where the bowels have not been attended to before the labour, this should be done on the second morning. The diet of puerperal women during the first week should be the same as that allowed to persons who are convalescent from fever, or from severe acute diseases. Until the secretion of milk is established, nothing but gruel, tea, a little thin arrow-root, or panado, should be allowed. On the fourth day, if there is no pyrexia, and the child has taken the breast, and the milk flows freely, a little beef-tea or chicken broth may be given. This should be continued in all cases till the end of the first week, and even at the end of that period, if the tongue is not clean, the pulse quiet, and the abdomen wholly free from tenderness on pressure, the patient should be kept on low diet. After the ninth day, in ordinary cases, some chicken or solid animal food may be allowed, with a little wine and water, and after this the patient may gradually return to her accustomed diet.

These are all the observations which I consider it necessary to offer on the phenomena and treatment of natural labours. When I have described all the varieties of difficult, preternatural, and complicated labours, I shall endeavour to give you a full account of the pathology and treatment of the acute, inflammatory, and febrile diseases of puerperal women, and the other diseases which follow delivery.

LECTURE XXII.

ON PROTRACTED AND DIFFICULT LABOURS.

The second class of labours includes all those cases in which the head of the child presents, and the delivery is not completed in twenty-four hours. It might be objected to this definition, that there are some cases in which it becomes necessary to deliver artificially before the expiration of twenty-four hours from the commencement of labour; and that there are many others in which the process is protracted ten, fifteen, or even twenty hours beyond this period, without any unfavourable symptom occurring, and where the delivery is at last safely accomplished by the natural efforts. I think, however, with Dr. Denman, that this definition will, on the whole, be found to apply to practice in an advantageous and unexceptionable manner, and that it, in particular, affords a remedy against impatience, and is calculated to guard the practitioner in some measure from premature attempts to give assistance, without incurring the danger of those evils which might be apprehended from too long delay. When regular pains have continued twenty-four hours, the patient and her friends naturally feel anxious to know the cause of the protraction, and whether there are any unfavourable symptoms present to excite alarm. When a labour has continued twenty-four hours, and there is a probability that it will not be completed for some time longer, it is a good rule, whether you are urged or not by the fears and anxieties of others, carefully to examine the condition of the patient — all the symptoms, local and constitutional — to ascertain, if possible, the cause of the delay — closely and calmly to watch the progress of the case, and promptly to employ the appropriate treatment. Beyond a certain period, it is proved by the experience of all practitioners that a woman cannot continue in labour, whatever the cause of the difficulty may be, without certain hazard, and that the danger is, in most cases, proportioned to the duration of labour. In the course of fifty-seven years, 78,001 women were delivered in the Dublin Lying-in Hospital, of whom one out of every ninety-two died, and one child out of every eighteen was still-born. In women who were in labour with their first children from thirty to forty hours, one in thirty-four died, and one child in five was still-born. When labour was protracted from forty to fifty hours, one in thirteen died. If labour were protracted other ten hours, one-eleventh of the women died; and when it went on between sixty and seventy hours, one-eighth died, and nearly one-half of the children. It follows from these statements made by Dr. Burns, from the Tables of the Dublin Lying-in Hospital, calculated by Dr. Breen, that when labour is protracted beyond thirty hours, one woman in thirty-four dies; in other ten hours, the danger is more than doubled, for one in thirteen dies; then one in eleven; and next one in eight. A single case of difficult and tedious labour in private practice, where you are left to your own resources, and where you know not how to proceed, or decide erroneously, will probably, however, have more influence in impressing upon your minds the vital importance of this subject than any general statements which I can make.

Protracted and difficult labours can generally be referred to one or several of the following causes: —

1. Feeble, irregular, or partial uterine action, from passions of the mind, original or accidental debility in the mother, and other constitutional causes which impair the energy of the brain and nervous system of the uterus.
2. A rigid, undilatable condition of the os uteri, vagina, and other soft parts.
3. Rigidity of the fœtal membranes; their premature rupture; imperfect discharge of the liquor amnii; over-distension of the uterus by dropsy of the amnion; and a plurality of children.
4. Shortness of the umbilical cord, from being twisted once or several times around the neck and trunk of the child.
5. Unusual size and ossification of the head of the child; hydrocephalus; the forehead situated under the arch of the pubes; presentation of the face; one of the arms with the head; death of the child, and the distension of its abdomen with air or fluid.
6. Distortion and bony tumours of the pelvis.
7. Diseases of the uterine organs; as cancer of the os uteri; cicatrices of the vagina, and cohesion of the labia; ovarian and uterine tumours within the pelvis.

1. OF PROTRACTED AND DIFFICULT LABOURS FROM FEEBLE, IRREGULAR, OR PARTIAL UTERINE ACTION.

The uterine contractions may be of short duration, continuing only for a few seconds, or they may return only after long and irregular intervals, so that many hours may elapse before the first stage of labour is considerably advanced, though the orifice of the uterus be soft and dilatable. This does not usually depend on constitutional debility, for in many women, exhausted by tubercles of the lungs and hectic fever, the uterus contracts forcibly and regularly in all the different stages of labour, and I do not recollect being obliged to apply the forceps in a single case of this description. Some women are liable to have one labour protracted from this cause without any assignable reason, and all their succeeding labours are speedily accomplished. Others have this slow and imperfect action of the uterus in all their labours, and it appears to depend on a sluggish, dull, torpid, inactive condition both of body and mind; in a word, on a want of proper nervous irritability in the constitution. In some women, from observing the progress of former labours, we can almost predict with certainty that in all succeeding labours the first stage at least will go on very slowly, and occupy a considerable number of hours, though there be no rigidity of the os uteri or membranes, or over-distension of the uterus, and the umbilical cord does not surround the neck of the child. "The circumstances attending labours," observes Dr. Denman, "are generally alike, yet in many women they are marked with some peculiarity, most frequently in the time required for their completion. When there has been an opportunity of observing the progress of labour in two or three instances, we shall be able to tell what will be the probable termination of a future labour in the same person, and when it will take place; and we can no more control the order of a labour in one woman, so as to make it correspond with, or exactly resemble, that of another, than we can judge of the quantity of food which one person may require by that which is sufficient for another, or regulate any other function of the body. One woman may require twelve hours for the production of the same effects in the time of labour that another may finish in four hours: and it would be in vain to attempt to make an alteration, because the reason exists in some essential property of the constitution, beyond the power of medicine, or of any other method, to alter." You will readily perceive, from this statement, how unnatural the rule must be which some distinguished accoucheurs have laid down for the treatment of all cases of labour, viz., that the first stage should be invariably completed in twelve hours from the commencement of regular pains, and how impossible it is to act upon this principle, without producing the greatest mischief.

Sudden and violent emotions of the mind have a powerful influence over the contractions of the uterus, and may at once completely suspend them, or greatly impair their energy. Dr. Merriman relates a case of a woman who was seized with a fit, from which she never recovered, in consequence of a medical practitioner being abruptly introduced into her room to whom she had previously taken a violent dislike. I saw, in consultation with Mr. Jones, of Soho Square, a young married lady in labour with her first child, not long since, in whom the uterine action was almost completely suspended, and an attack of puerperal convulsions threatened, from an excessive fear of dying during delivery, or being subjected to some frightful operation. A female friend had put into the hands of this lady, when seven months pregnant, the London Practice of Midwifery, and she could read no other book during the latter months. The consequence was, when labour commenced, she thought of nothing but flooding, convulsions, arrest and impaction of the head, deformed pelvis, and all the operations so minutely described in that work. The uterine action was so completely destroyed by terror, that she would have sunk in a few hours had the delivery not been effected by artificial means. "Such extreme cases as this rarely occurs," says Dr. Merriman; "but various kinds of mental excitements continually prevail, and, without producing the more violent ill consequences, tend, however, to disturb and interrupt the favourable process of child-birth. The influence of mental emotions over the act of parturition was strongly and very extensively exemplified not long since on the occasion of the sudden decease, immediately after delivery, of an illustrious and most amiable personage. Indeed this calamitous event is still found to operate unfavourably on the minds of patients in a certain rank of life."

In protracted labours, arising solely from feeble and irregular uterine action, if the pulse is not much accelerated, the surface cool, little thirst, tongue moist, no tenderness of the abdomen, no unusual sensibility of the vagina and os uteri, and dilatation is advancing, however slowly, we ought not to interfere. Many hours often elapse before the first stage of labour is completed, yet no bad effects from the pressure of the head of the child upon the soft parts, or exhaustion, or fever, will be produced, if the apartment is preserved cool, if all voluntary efforts to bear down are checked, if the posture is occasionally changed, and if nothing but mild nourishment and diluents be allowed. If there is thirst and slight pyrexia, some purgative, as castor-oil, which operates quickly, should be given, or a stimulating enema exhibited. Purgatives and glysters often have the effect of exciting uterine contractions, and they assist in preventing fever and inflammation from being excited in the progress of a tedious labour.

If opiates are ever administered with success in these cases, it can only be at the commencement of the first stage of labour, before the membranes are ruptured, with the view of entirely suspending for a time the uterine contractions, and procuring rest. When the os uteri is fully dilated, and the membranes ruptured, I have never seen opium given with advantage, and I have repeatedly seen it produce bad effects. If the first stage of labour without rigidity of the os uteri is greatly protracted, it is often of advantage to rupture the membranes before it is fully dilated, to raise the head that the liquor amnii may entirely escape, and to make gentle pressure with the finger around the margin of the os uteri during the pains, or to press up the anterior lip where it remains down between the head or symphysis pubis, and when the posterior lip has disappeared. Even in first labours, before the os uteri has been fully dilated, where there has been danger of exhaustion, I have adopted this practice in come cases with the most decided advantage. You will not, however, infer from this, that I wish you to suppose that it is justifiable, in ordinary cases of labour, artificially to rupture the membranes.

It is chiefly in cases of protracted labour from deficient uterine action that ergot of rye has lately been so strongly recommended and so generally employed. From the days of Paré and Guillemeau to the present time, the belief has prevailed that certain substances possess a specific power over the actions of the uterus, and promote labour pains. Oil of cinnamon was used by Chapman, and I believe he had great faith in it. In Brachen's time the same opinion was very generally entertained, but he did not believe it to be true. Ergot appears to have been employed by midwives on the continent from time immemorial. Desgranges published his first researches on its properties in 1777, and they have since been examined by several American and French physicians. The results of the observations hitherto made upon the secale cornutum prove that it does in some cases of labour excite the contractions of the uterus in a very peculiar manner, but that its action is extremely uncertain, and that it often fails to produce the slightest effect. Some deny that it possesses any influence whatever over the uterine contractions; but there can be no doubt that it occasionally does act upon the uterus, and very violently.

As it is impossible to determine in many cases the precise cause of the difficulty in protracted labour, — to be sure that the restrained uterine contractions do not depend on some unusual condition of the contents of the uterus, and that the life of the child may not be destroyed by its use, I have never ventured, either in public or private practice, except in cases of accidental uterine hemorrhage and retained placenta, to administer the ergot of rye to a woman in labour, and I am satisfied that no individual under my care has suffered from the want of it. But I have been consulted in many cases of protracted and difficult labour, where it had previously been administered, and in some I have not opposed its exhibition, where it has been firmly believed by other practitioners that it might be given with safety and advantage. Twenty grains of the powder have been given in a table-spoonful of warm tea, or warm water and sugar, and repeated three or four times at intervals of twenty minutes or a quarter of an hour. Or two or three drachms of the powder have been added to six ounces of boiling water, which has been allowed to stand for twenty minutes, and then to be strained, and two ounces of this infusion have been given for a dose at intervals of a quarter of an hour. In other cases the decoction of ergot has been employed, or one drachm of *this* preparation, called the liquor secali cornuti, has been repeatedly given, and one fluid drachm of which is said to be equal in effect to one drachm of the powder. In the greater number of the cases in which I have seen it given, little or no effect has been produced upon the uterine contractions. But the evidence of many others is so strong in favour of its decided influence upon the uterus during labour, that I believe it does sometimes, and in a striking manner, increase the labour pains. The pains produced by it are represented to be different from those nine-tenths of women experience in labour. The contractions excited by the ergot are unusually violent; they occur in rapid succession, so that there are no intervals between them, like those observed in natural labour.

It is agreed on all hands that ergot ought not to be given in first labours, as the rupture of the perineum would likely be the result; that it ought not to be administered in any case till the orifice of the uterus is fully dilated, the membranes ruptured, and the presenting part is ascertained. Nor should it be given in any case where there is a suspicion that deformity of the pelvis exists, or disproportion between the head and pelvis from any cause whatever. A foreign accoucheur has, indeed, recommended it to be given in cases of distortion of the pelvis, for the purpose of fixing or jamming the head of the child in the brim, in order that the long forceps might be applied over the occiput and forehead. But where distortion exists, or disproportion between the head and pelvis from any cause, I have never found that the secale was necessary to fix the head in the brim; this has generally taken place, more speedily than was desired, by the unassisted uterine action, and fatal contusion or rupture of the soft parts has too often been the result of attempting to deliver in such cases without lessening the volume of the head.

It would only be in such a case as the following that the ergot could be given without certain danger, and even in such a case I would prefer trusting to the efforts of nature, and the influence of other remedies whose operation is attended with less hazard to the mother and child. Suppose a woman has had previous labours — has a capacious pelvis — the os uteri soft and widely dilated, the membranes ruptured, the head presenting and low in the pelvis, no fever or inflammation, but the pains are feeble and irregular, and have little effect in pushing forward the head for several hours, and you fear exhaustion from longer continuance of the labour, and time, which you can ill spare from other professional business, is being consumed apparently to no purpose — under such circumstances you might be tempted to exhibit the ergot, and if you did so the probability is that it would produce no effect. But if it did act, and the child, which had been alive a short time before, was born dead, with or without the umbilical cord round the neck, you will then have good reason to regret that the case had not been left to nature. If in practice you go about constantly armed with this weapon, as many midwives in

London now do, to my certain knowledge, you will probably be tempted to administer it in cases of protracted labour from great rigidity of the os uteri, hydrocephalus in the child, preternatural presentation, plurality of children, distortion of the pelvis, hemorrhage from attachment of the placenta to the neck of the uterus, over distended urinary bladder, and other cases where the difficulty and danger are not removed by exciting the contractions of the uterus. Secale is certainly not a remedy which can be safely entrusted to inexperienced practitioners, or which ought to be prescribed in any case without the utmost caution. I have seen a number of cases of first labour, in which the ergot had been given largely, though the os uteri was rigid, not more than half dilated, and the membranes unruptured: violent peritonitis followed in one of these. It was employed not far from this, in a case of protracted labour, where the difficulty arose from an immense accumulation of urine in the bladder; the bladder was ruptured, and the urine escaped into the sac of the peritoneum. I saw the perforated bladder soon after the occurrence, at the Middlesex Hospital, in the possession of Dr. Hugh Ley. It would have been employed in another case of difficult labour from retention of urine, which I saw in consultation not long after, had I not prevented it. In this case the head was so completely jammed in the pelvis that the catheter could not possibly be introduced into the bladder, and the urine drawn off, till the volume of the head had been lessened by perforation. I was called to a patient of the St. Marylebone Infirmary, in 1832, who had been in labour nearly sixty hours, and was attended by one of the parochial midwives, who had given ergot liberally during the labour. The head was extracted with great difficulty after perforation. In 1833 she was delivered safely by the same means, but in 1834 she was attended by two inexperienced accoucheurs, who gave her the ergot of rye in great doses, without reflecting on the distorted condition of the pelvis. The vagina was afterwards lacerated by the forceps, and she died, soon after being delivered by the perforator and crotchet, with incessant vomiting and complete exhaustion. This is not the only case of distorted pelvis which I have seen where ergot has been employed. In other two the women died, and in a third there was an incurable fistulous communication between the bladder and vagina. In more than one case of placental presentation which I have seen, the ergot had been given before it was distinctly ascertained that the hemorrhage arose from attachment of the placenta to the neck of the uterus. A gentleman who had unbounded faith in the efficacy of secale, and who had prescribed it in a multitude of cases, met with one of protracted labour from congenital hydrocephalus, and here also his favourite remedy was vigorously applied; but the head could not enter the brim of the pelvis, and when the patient was completely exhausted I was requested to see her. A great quantity of fluid escaped on opening the head, which was afterwards readily extracted; but she died in a short time. Ergot was given in a case of difficult labour, from hydrocephalus in the fœtus, which occurred a number of years ago in the neighbourhood of London, and rupture of the uterus was the consequence. In July, 1836, a case of arm presentation occurred where ergot was given before the presenting part was felt. Great difficulty was experienced in turning. The child was dead, and the woman died on the fifth day. Not long ago, it was given in a case of twins. The arm of the second child presented, and the utmost difficulty was experienced in the operation of turning.

It was observed in America that the children were often stillborn after the exhibition of the ergot of rye, and this led many practitioners in that country to discontinue its use altogether. The same circumstance has been noticed in this country, and it is not difficult to explain the cause. The contractions of the uterus excited by the ergot of rye are different from those of natural labour; they are of much greater strength and longer duration, like a number of violent labour pains continued into one another without intervals. The long interruption to the circulation of the maternal blood in the uterus and placenta, which must take place during these lengthened contractions, and the want of the necessary changes in the fœtal blood, will explain why children are often born in a state of asphyxia after the administration of the secale cornutum.

2. OF PROTRACTED AND DIFFICULT LABOURS, FROM A RIGID AND UNDILATABLE STATE OF THE ORIFICE OF THE UTERUS, VAGINA, AND OTHER SOFT PARTS.

It is in first labours and in women advanced in age, that rigidity of the os uteri, and other soft parts, is most frequently met with. Sometimes it is confined to the orifice of the uterus, so that the second stage of labour is very short, when the first has been extremely protracted. More frequently the rigidity exists both in the orifice of the uterus and in the parts at the outlet of the pelvis, so that the first and second stages are both tedious and painful. In the greater number of cases of this description, if no improper treatment be employed, the dilatation of the os uteri and other parts is at last accomplished with safety to the mother and child. It is necessary, however, to be fully aware that both are exposed to imminent danger if the labour is protracted from rigidity beyond a certain period ; and every practitioner ought thoroughly to know the symptoms which indicate that the labour has been left to nature, or allowed to continue as long as is compatible with their safety.

The parts after a certain period become hot, dry, swollen, and puffy, from the long continued pressure and interrupted circulation, and so tender that an examination cannot be made without causing pain. The discharge from the vagina becomes offensive, and retention of urine takes place, from the pressure of the child's head on the urethra and neck of the bladder, with a sense of soreness and tension of the abdomen. More or less anxiety should always be felt about a case of protracted labour where any of these local symptoms are observed, and especially where the employment of the catheter becomes necessary, and where some difficulty is experienced in passing it into the bladder, and where the head of the child has remained several hours without making any progress, and the bones are compressed, and there is a large tumour under the scalp. The excitement of great constitutional disturbance, with increased determination of blood to particular organs, especially the brain, and exhaustion of the vital powers, are the most unfavourable general symptoms observed in cases of protracted labour from rigidity. The accession of fever in the second stage of labour, or in the first stage after the membranes have long been ruptured, indicated by rigors, a rapid pulse, furred tongue, and flushed countenance, affords additional evidence that the labour cannot be left much longer to the natural efforts; and still more unfavourable is the case if the labour pains have been gradually diminishing in force, if the head has ceased to advance, and symptoms of exhaustion have appeared. One of the most striking circumstances observed in these cases is the sudden manner in which the unfavourable constitutional symptoms manifest themselves, and the necessity which arises for the immediate interference of art. The pains cease almost entirely, the head begins to wander, the face and trunk become covered with a clammy perspiration, the features and tone of the voice become completely changed — so altered that you might almost doubt whether it was the same individual you had been so long watching with anxiety — with constant restlessness and jactitation.

These local and constitutional symptoms may occur before the first stage of labour has been completed, but they are, perhaps, most frequently observed after the head has passed through the os uteri into the pelvis, and has remained there pressing for some time upon the parts at the outlet. While the dilatation is going on, however slowly, and the head is descending, and none of these symptoms are present, the labour may safely be left to nature; but when the process is arrested, and the parts within the pelvis begin to suffer from the pressure, and symptoms of fever and exhaustion appear, it is your duty to interfere, otherwise the strength of the patient may be so exhausted that she will speedily die after delivery from the mere shock of the labour, or from hemorrhage and retained placenta, or, what is, perhaps, worse than death, she may have sloughing of the uterus, vagina, bladder, and rectum. There are few cases in midwifery which require greater practical skill to conduct to a happy issue than some of these cases of protracted labour from rigidity, and which are sometimes complicated with other causes of difficulty.

The most important remedy in cases of rigidity of the os uteri is doubtless venesection, which not only promotes the dilatation of the parts, but checks the disposition to inflammation and fever. If the patient is robust, the pulse full, strong, and frequent, and unfavourable symptoms begin to appear, especially congestion of the brain, the abstraction of a moderate quantity of blood from the arm is often followed by relaxation of the os uteri and external organs, efficient pains, and the speedy termination of the labour. In all these cases it is the most safe and powerful remedy we possess, and, if employed with proper caution, can never be injurious where the strength of the patient has not been previously exhausted by the long-continued efforts. You must distinctly understand, however, that bloodletting should be employed in no case of labour unless it is absolutely necessary, and that it is a remedy inapplicable to cases of disproportion between the child and mother, and where the protraction depends on feeble uterine action. Bloodletting during labour sometimes alarms the patient and her attendants, and is absolutely injurious, by inducing debility in the puerperal state. Some practitioners have strongly recommended the exhibition of an enema of starch and laudanum in cases of protracted labour from great rigidity of the os uteri, after the employment of venesection.

Where bloodletting fails to relieve the symptoms, and artificial delivery becomes necessary, it may be safely completed with the forceps, if the os uteri is fully dilated, and the head has descended so far into the pelvis that an ear can be felt. Where the second stage of labour has not commenced, and the greater part of the head remains above the brim, and any circumstance occurs demanding immediate delivery to save the mother's life the perforator and crotchet must be employed.

LECTURE XXIII.

PROTRACTED AND DIFFICULT LABOURS, FROM RIGIDITY AND PREMATURE RUPTURE OF THE FŒTAL MEMBRANES, OVER-DISTENSION OF THE UTERUS, AND UNUSUAL SIZE AND PRESENTATION OF THE HEAD OF THE CHILD.

Venesection, as recommended so strongly by Mauriceau, is undoubtedly the most important remedy which can be employed in cases of protracted labour from rigidity of the os uteri and other soft parts, especially where there is fever with determination of blood to the head. But it is not generally necessary to take away more than twelve or fourteen ounces of blood from the arm, or twenty in very robust plethoric persons, and I have seen no cases in which the abstraction of forty or fifty ounces at a time was required, or would have been justifiable. In America, women have been bled to this, or to a still greater amount, to promote general relaxation of the system, and of the parts. But, like other powerful remedies, as Dr. Merriman observes, "this has sometimes been carried to excess, so as to be injurious to the patient during parturition, and rendering her recovery tedious, if not doubtful." A woman with rigid os uteri during labour does not require the same quantity of blood to be taken away which it would be necessary to remove if she were labouring under pneumonia or peritonitis. The results of my experience on this point are very different from those of Dr. Hamilton, who says, "hitherto, in a very large proportion of the cases of protraction from this cause, he has found copious bloodletting rapidly promote the dilatation. By copious bloodletting, he means, abstracting as much blood by one venesection as he should direct in a patient of a similar constitution, if she were labouring under an acute inflammatory disease." He admits, however, that "in cases of relaxed debilitated women, with *toughness* of the os uteri, venesection cannot be ventured upon, and it becomes necessary to administer an opiate enema. The author had recourse to this practice, he must confess, with great reluctance, having seen many cases where the administration of opiates had been prejudicial. But he can now say that, under proper management, the practice is safe. The utility and safety of the practice are mainly influenced by the time at which it is adopted. If strong and frequent pains, continued for six or eight hours, do not decidedly promote the dilatation, the opiate enema should be had recourse to, and it will seldom disappoint the expectation of the practitioner. But if the first stage, with strong and frequent pains, be allowed to go on for twelve hours or upwards, without having completed the dilatation of the os uteri, there is the risk that the opiate will so far interfere with the progress of the labour that instrumental delivery shall become necessary." "In some instances," says Dr. Collins, "especially with first children, the mouth of the womb continues rigid and hot, with little tendency to yield under uterine action, accompanied not unfrequently by considerable irritation. In such, bleeding to the extent of ten or twelve ounces, and keeping the patient under the influence of slight doses of tartar emetic, to which a small quantity of opium should be added, will be found to promote relaxation, and thus be productive of the best effects." Spontaneous vomiting is often followed by relaxation of the os uteri, but I have never ventured to prescribe an emetic to any woman in labour. Dr. Lowder says that he seldom found benefit from their exhibition, though he has frequently seen them used. The warm bath was employed in America, but excessive hemorrhage so often followed it, that the practice was abandoned. Dr. Merriman states that he has seen good effects produced from the warm or tepid hip-bath, in relaxing the soft parts. "Upon the same principle of inducing relaxation and consequent dilatation of the os uteri, he says clysters of tobacco were recommended in America: but the alarming symptoms which followed in the single case where tobacco was thus employed, will, I trust, prevent a repetition of this experiment."

In some cases, after the labour has continued many hours, the os uteri is so thick, hard, smooth, and polished, and so little dilated, that you might be induced to believe that the head would never pass, but it is astonishing how it will yield in time, if you have patience, and employ the proper measures to prevent exhaustion and fever. These means will not, however, invariably succeed, and artificial delivery sometimes becomes imperative, and, from all that has fallen under my observation, I am convinced that there is far less danger from premature interference, than from delaying too long to deliver artificially. In the eleventh volume of the Medico-Chirurgical Transactions, Mr. P. N. Scott, of Norwich, one of the most judicious and experienced practitioners now in Britain, has recorded the following very remarkable case of rigidity of the os uteri, in which the separation of the inferior segment of the uterus took place during labour, and the patient recovered. "On Sunday, the 29th of October, at seven o'clock in the evening, I was requested by Mr. Keymer, a respectable surgeon of this city, to visit Mrs. Hall, a married woman, aged 36, who was in labour of her first child. He stated to me that he had been in attendance for sixteen hours, that labour had commenced about six o' clock on the Saturday evening, when he first saw her, and that though the liquor amnii (as he was informed by the nurse) had escaped some hours previous to his first visit, there had been but little progress made towards delivery. Mr. Keymer is a gentleman of very extensive experience, having been above fifty years in large practice, particularly in this branch of the profession, but he assured me that he had never seen a case in which the sufferings of the patient were so extreme, and in which the os uteri was so tense and rigid. On seeing the patient, I found that her sufferings continued unabated, that the os uteri was not dilated to more than the size of a half crown piece, and that it was principally of a thick, unyielding, but, at a small portion of its extent, of a somewhat spongy texture. As Mrs. Hall was of a very thin, spare, delicate habit, I thought it improper to bleed her, and therefore recommended warm fomentations, and other means to allay irritation. The following morning, at eleven o' clock, I again visited her with Mr. Keymer; she had passed a restless night, distressed with most violent and constant pains, continually exclaiming that she was certain she would burst. I found her in a most alarming state, and she appeared to be rapidly sinking: she with difficulty told me, that two hours before, during a most severe pain, she felt something snap, and, to use her own words, 'the web of her body had given way;' the noise of which one of her attendants declared she heard; the pains had then suddenly ceased, attended with a discharge of blood, fainting, cold sweat, feeble pulse, and a vomiting of a brownish fluid. On introducing my hand under the bed-clothes, I found there had been a very considerable hemorrhage, and among the coagula I discovered a substance which I put aside for future examination. At this time I found the head of the child so low as to enable me to accomplish delivery speedily with the vectis. The child was living, and the placenta was expelled without any difficulty. After waiting some time, by the use of light cordials, the patient appeared to revive, but there was a singular tension of the abdomen, such as I had never before witnessed. It appeared to me to be a hopeless case, and I left the patient, fearing she could not long survive. On the Tuesday morning her abdomen was swelled to an enormous degree, much larger than previous to her delivery, and for ten days it remained very tense and tender: the pulse was at the same time exceedingly rapid and feeble, skin hot, and tongue furred. I drew off between three and four pints of urine in a very fœtid and acrimonious state, and had occasion to repeat this operation three or four times in as many days. In a week the bowels required large doses of calomel, Epsom salts, senna, &c., &c., to relieve them, and for a month the patient was feverish, and excessively weak and languid. During this time several large coagula were expelled, and the body regained its natural size. She was much emaciated, but by the use of light tonics and nutritious diet she gradually recovered her strength. Her health is now much re-established, but she has always suffered considerable inconvenience from a slight prolapsus uteri, which still continues. There is very considerable tenderness in the pudenda, and at the last examination per vaginam, which was about three weeks after the delivery, I found a continuous cavity, without any distinction between vagina and uterus. The catamenia appeared about five weeks ago; they were preceded by pain in the back, and continued in very small quantity for two days. The child is in good health, and the mother has a plentiful secretion of milk." The appearance presented by the os uteri, and an irregular part of the cervix surrounding it, has been represented in *this* coloured engraving, which precedes the paper. I had an opportunity some years ago of seeing the preparation of the parts at the Middlesex Hospital, in the collection of Dr. Merriman, which passed into the collection of Dr. Hugh Ley, and since his death into that of Dr. Bull. I could not obtain permission to remove it from the spirits to ascertain if the Nabothean glands and penniform rugæ were visible, but the whole history of the case, and the appearance of the preparation, leave no doubt that the os uteri and cervix had been torn away from the body of the uterus. A great many anatomists and surgeons who examined the part in the recent state formed this opinion. Mr. Scott concludes this communication with the following explanation of the manner in which the accident occurred. "It has appeared to me, as Dr. Merriman suggested, that the head of the child passed through the superior aperture of the pelvis, carrying the uterus before it with the os utero very little dilated, and that in this way the dilatation of the uterus was prevented by the head pressing it firmly against the sides of the pelvis, so as to prevent the action of the uterus from being exerted on the cervix. The great force of the uterus acting on the body of the child might thus produce the separation of the circular portion exhibited." I saw a case in consultation with Mr. Owen, of Holborn Bars, where the os uteri was thick, hard, smooth, and so little dilated, and pressed so close to the outlet of the pelvis after labour had continued for thirty hours with great severity, that it seemed probable an accident similar to that described would take place, but the labour was at last safely effected, after venesection, an opiate enema, and artificial dilatation, had been employed.

Oblique position of the os uteri has been enumerated by Dr. Denman among the causes of difficult labour depending on rigidity of the parts to be dilated, and Daventer erroneously attributed nearly all difficult labours to obliquities of the uterus. Where great relaxation of the abdominal parietes exists, the fundus uteri sometimes falls forward, and the os uteri is consequently thrown upward and backward in an unusual degree, but this cannot be regarded as a common cause of difficult labour, and where it occurs it is readily relieved by applying a bandage firmly around the body, and by keeping the patient during the first stage of labour upon the back, with the shoulders slightly depressed. Daventer, Baudelocque, and Desormeaux, have all attributed an undue degree of importance to obliquities of the uterus, and have recommended passing the fingers, or even the whole hand, into the vagina, to push the head of the child above the brim of the pelvis, and also the lower part of the uterus, and with the extremities of the fingers to drag forward the anterior lip of the os uteri to the centre of the pelvis, and to keep it there until complete dilatation has taken place. This is one of the many dangerous manœuvres described by writers, which ought never to be thought of. "Cases have been recorded," says Dr. Denman, "in which it was said that the os uteri was perfectly closed, and in which it has not only been proposed to make an artificial opening, instead of the closed natural one, but the operation has actually been performed. I do not know that I should be justified in saying that such cases have never occurred in my practice, but I am persuaded that there has been an error in this account, and that what has been called a perfect closure of the os uteri has not been such, but that we have been unable to discover it by reason of its obliquity."

Dr. Merriman is of opinion that the cases of difficult labour from the os uteri being projected above the symphysis pubis, described by Deventer and other writers, were instances of retroversion of the uterus at the full period. I have met with no cases tending to confirm or refute this opinion. Sometimes the os uteri descends with the head to the outlet of the pelvis, or actually passes through it at the commencement of labour: where this happens, the patient should be placed upon the back, with the pelvis elevated and the shoulders depressed, and the prolapsed uterus returned to its natural situation by long-continued gentle pressure with the expanded fingers. In some cases the anterior wall of the vagina and neck of the bladder are pushed down even through the external parts during labour, before the presenting part, and sometimes the posterior wall. In one case the latter was mistaken for the fœtal membranes, and an unsuccessful attempt was made to perforate with the finger the back part of the vagina. When this accident occurs, the protruded part of the vagina and bladder should be pressed up and supported by the fingers during the pains, that the head of the child may escape. Dr. Merriman relates a case in which the bladder, distended with urine, filled up the anterior part of the vagina, and was punctured and afterwards sloughed. The practitioner supposed that it was the child's head, enlarged by hydrocephalus.

3. OF PROTRACTED AND DIFFICULT LABOURS FROM RIGIDITY OF THE FŒTAL MEMBRANES — THEIR PREMATURE RUPTURE — IMPERFECT DISCHARGE OF THE LIQUOR AMNII — OVER-DISTENSION OF THE UTERUS BY DROPSY OF THE AMNION AND A PLURALITY OF CHILDREN.

The membranes not unfrequently burst spontaneously, and the liquor amnii begins to escape after the commencement of the labour pains and the dilatation of the os uteri. One, two, or three days, or only a few hours, may elapse before the water begins to flow and uterine action occurs. The nature of the presentation should be ascertained as soon as possible by an internal examination, in all cases of premature rupture of the membranes.

The early rupture of the membranes is almost a diagnostic sign of preternatural presentations. The whole liquor amnii may be quickly discharged, or if the opening in the membranes be small, and at a distance from the cervix uteri, or the head of the child lies over the aperture, it may escape in small quantities at a time, or it may ooze out slowly, and keep the patient during a long period in a very uncomfortable state. When active uterine contractions take place, whether it be a first or subsequent labour, the process often goes on as safely and expeditiously as if nothing unusual had occurred, and no interference is necessary or proper. It is only in cases of labour protracted by feeble uterine action, from imperfect discharge of the liquor amnii, or, as it has been called, dribbling of the waters, that anything is required to be done, and then the membranes should be freely torn open, and the head of the child held up or pressed towards the sacrum between the pains, and the os uteri, if not rigid, very gently dilated with the fingers. Unusual rigidity or thickness of the fœtal membranes, with or without an excessive quantity of liquor amnii, is a much more common cause of protracted labour than their premature rupture, and their artificial rupture is often followed by strong and regular contractions, and the safe and speedy termination of the labour. If the perineum and os uteri are rigid, and the head is high up, and it is the first child, it is seldom necessary to have recourse to rupturing the membranes before the first stage of labour is nearly or fully completed. When the first stage is far advanced, the parts yielding, yet the pains are feeble and ineffective for several hours, then you may rupture the membranes with advantage. When there is a great quantity of liquor amnii, or the uterus is over-distended by twins, it has not the power to contract upon its contents with sufficient force to rupture the membranes, and it may become completely exhausted if this is not done artificially. The uterus, as Smellie states, cannot come in contact with the body of the child, and press down the head, until the membranes are pushed a considerable way before it into the vagina, nor even then until they are broke. Where there is a considerable quantity of fluid between the head and membranes, and the pains are sufficiently strong to render them tense, there is usually no difficulty in perforating them with the point of the finger sharply forced against them; but where the pains are feeble, and the membranes are in contact with the head, very great difficulty is often experienced in opening them. The best and safest method is to pass the nail of the fore-finger backward and forward over the membranes, like a saw, till the liquor amnii is felt escaping. I have never found it necessary to use a probe, or any other instrument than the finger, for this purpose.

4. OF PROTRACTED AND DIFFICULT LABOURS FROM SHORTNESS OF THE UMBILICAL CORD, IN CONSEQUENCE OF BEING TWISTED ONCE OR SEVERAL TIMES AROUND THE NECK AND TRUNK OF THE CHILD.

Sometimes the umbilical cord is so short, without surrounding the neck of the child, that it is torn during the expulsion of the trunk and lower extremities, or it is necessary to tie and divide it before they can be extracted. Much more frequently the cord is twisted once or oftener around the neck, and during both the first and second stages of labour the head is in consequence not only retracted upon the declension of every pain, but during the pains it is not pushed forward with the usual force, and the labour is protracted. In some cases the head is held up so high by this twisting of the cord around the neck that the nature of the presentation cannot be positively ascertained until the first stage of labour is nearly completed. You may suspect it to be an arm presentation, because no part of the fœtus can be touched when the os uteri is fully dilated; and yet, when the hand is introduced to turn, and the membranes are ruptured, the head presents, and is prevented from descending in the ordinary manner from the shortness of the cord. In the second stage of labour, when the head is in the cavity or pressing against the parts at the outlet of the pelvis, you may suspect that the cord surrounds the neck, by the head receding in an extraordinary manner after each pain goes off. There is no rigidity of the parts, nothing unusual about the size and position of the head, no deficiency of uterine contractions, yet the head does not pass for many hours; not, indeed, till your patience and the woman's strength are both very nearly exhausted. You may be certain that this is the cause of the delay by passing up two fingers, or the whole hand, as high as possible between the symphysis pubis and head, and feeling the cord surrounding the neck. If it pulsates strongly, I entreat you to have patience, to leave the case to nature if immediate delivery is not necessary on some other ground, and to abstain from exhibiting ergot of rye or applying the forceps. But if the pulsations were becoming gradually more feeble, and you had proofs of the fœtal circulation being interrupted, and the labour were greatly protracted, the best practice certainly would be immediately to deliver with the forceps. In a case of tedious labour I lately saw in consultation with Mr. Russel, of Broad Street, I declined at first employing the forceps, because the cord was around the neck, and was pulsating vigorously, and the mother was not exhausted; but after some hours the pulsations in the cord had become extremely weak, and the child would probably have been destroyed in a short time had we not interfered. The blades of the forceps were easily applied, and the child was soon extracted alive and uninjured.

The operation of turning was sometimes had recourse to by Smellie in these cases.

"In June, 1751," he says, "I was called by a midwife to a woman who had been many hours in labour, and found that, after the discharge of the waters, the head was forced low down by every pain, but afterwards drawn up again. I was likewise informed, that formerly she used to have large children and quick labours. Encouraged by this information, I tried to turn the child, but was prevented by the strong contraction of the uterus; but in making this trial, and raising the head, I not only found the funis surrounding the neck, but likewise the uterus contracted before the shoulders. This last I dilated with my fingers as much as possible, then withdrawing my hand, applied the forceps and delivered the child, which had been dead for some days. The funis was three times round the neck, being much tumefied and of a livid colour." Smellie made two capital mistakes in the treatment of this case; the first was in endeavouring to deliver by turning the child, which ought never to be done under similar circumstances, and which I hope the uterine contractions will also prevent you from carrying into effect, should you make the attempt. The next practical mistake was in delivering with the forceps, when he knew, or might have known, that the child was dead.

5. OF PROTRACTED AND DIFFICULT LABOURS FROM UNUSUAL SIZE AND OSSIFICATION OF THE HEAD OF THE CHILD. HYDROCEPHALUS — THE FOREHEAD SITUATED UNDER THE ARCH OF THE PUBES — PRESENTATION OF THE FACE — ONE OF THE ARMS WITH THE HEAD — DEATH OF THE CHILD, AND THE DISTENSION OF ITS ABDOMEN WITH AIR OR FLUID.

If the pelvis is not above the average size, and the head is unusually large and hard, it will pass through the apertures with difficulty, or be arrested in them. The progress and termination of these cases is similar to those in which the pelvis is small or distorted, and the head does not exceed the ordinary size. If the disproportion between the head and pelvis is inconsiderable, the labour is protracted, but if time is given, and no improper treatment be employed, it is at last completed without artificial assistance, and the child's life is preserved. But where the head is much too large to pass, it becomes arrested and impacted in the brim; the bones are gradually compressed, so as to ride over one another between the pains, and it becomes swollen and elongated in a remarkable manner, where the head has been allowed to remain long strongly compressed either in the brim, cavity, or outlet of the pelvis; the child is usually destroyed by the injury inflicted on the brain, and the soft parts of the mother suffer from the long-continued pressure. The symptoms which here indicate the necessity for artificial assistance have already been fully described, and the safety both of the mother and child will generally be best secured by interposing as soon as it is evident that the natural powers are insufficient for the expulsion of the head.

Hydrocephalus in the child is not a common cause of protracted labour; but the diagnosis is very difficult where it is, and if the nature of the obstruction be not early ascertained the result has generally been unfortunate. The os uteri dilates or is dilatable; but the head, if much distended with fluid, cannot enter or pass through the brim of the pelvis, and exhaustion or rupture of the uterus takes place. Where the affection is in a slighter degree, or if the pelvis be very large, the head is expelled by the pains, undiminished. "I have known," says Dr. Merriman, "one hydrocephalic fœtus pass entire, the circumference of whose head was seventeen inches; another passed alive, and lived an hour, whose head measured in circumference twenty-two inches: both the above labours were long and painful." Where the cause of the difficulty is clearly ascertained, by feeling the bones of the fœtal head widely separated from one another, and a sense of fluctuation is also perceived, and where the os uteri is dilatable, and the pains have continued strong for some hours, and the head has not entered the brim, the perforator should be employed without loss of time. The following cases which have come under my observation will convince you that congenital hydrocephalus is detected with great difficulty during labour, and that it is often followed by the most fatal consequences. Every case of this kind which I have seen has terminated fatally, and in the greater number of them the cause of the difficulty was not ascertained till it was too late.

In 1834, I was called to a woman in Warwick Street, who had been in labour nearly sixty hours. It was the first child. The head had not entered the brim, and it had not been discovered that the head was enormously distended with fluid. The delivery was easily effected by the perforator and crotchet; but inflammation of the uterus took place, which proved fatal in a few days. On the 14th of July, 1829, the late Dr. John Prout called me to see a woman, æt. 31, residing at No. 6, Draper's Place, Euston Square. She had been long in labour with her first child, and the presentation could not be positively determined. After the escape of an immense quantity of liquor amnii, and the complete dilatation of the os uteri, the presenting part remained entirely above the brim of the pelvis. It was not till I introduced the hand into the uterus, to deliver by turning, that I knew with certainty that the head presented, and that it was distended with fluid. Instead of turning, the hand was immediately withdrawn on the nature of the difficulty being ascertained, and the perforator employed, when several pints of bloody fluid gushed out. The head was readily extracted, but she had a violent fit of cold shivering immediately after, and had nearly died from exhaustion. She was ultimately destroyed by phlebitis and gangrene of the lungs. On the 12th of March, 1828, I saw another case of hydrocephalus in the fœtus with dropsy of the amnion, where the nature of the difficulty was not ascertained in time to be of any use to the patient, who was left too long in labour, and afterwards died from inflammation of the muscular structure of the uterus. But the two most unfortunate cases of difficult labour from hydrocephalus that I have ever seen, occurred last summer, and within a week of one another. Their histories are the following: —

A woman near the full period, residing at No. 9, Castle Street, St. Martin's Lane, was seized with slight labour pains on Saturday, June 18, 1842. The liquor amnii soon after escaped. The pains continued during the 19th and 20th at long irregular intervals, and had little effect on the os uteri. Early on the morning of Tuesday, the 21st, they were stronger and more frequent, and the midwife thought the labour would soon be finished. Suddenly a violent pain, like spasm, was experienced in the epigastric region, and soon after, sickness, faintness, hurried breathing, and coldness of the extremities, took place. Mr. Tucker was called to her about two hours after the occurrence of these symptoms, and found the placenta filling the os uteri, which was considerably dilated, and some hemorrhage going on. I saw her not long after, and thought she would probably die before the delivery could be completed. The hand passed readily into the uterus, and, there being no pain, came in contact with what seemed at first the bodies of two children. It was passed on to the fundus, where there was a foot felt. I grasped this, and, without the slightest exertion, brought it down, and extracted the trunk and extremities of the child, but the head would not follow. I perforated the back part of the head with the scissors, when there escaped a very large quantity of fluid, and it was not till this began to flow that I properly understood the cause of the difficulty. With the crotchet passed into the opening, the head was easily drawn through the pelvis, and the placenta being loose was soon removed. Little hemorrhage took place, and for twenty-four hours the symptoms were so favourable that it appeared she might recover. The sickness, however, never subsided, and she died suddenly forty-eight hours after being delivered. I examined the body the following day, with Mr. Tucker; and we found all the coats of the uterus torn from the fundus to the orifice on the anterior part. (The uterus is in my possession, and you shall have an opportunity of seeing it.) There are two ounces of blood in the peritoneum. The bones of the head were at least twice the natural size, the ossification, particularly of the parietal bones, having kept pace with the distension of the head from the fluid. The skull has been dried, and you see it nearly as large as the head of an adult.

Mrs. G——, æt. 30, 96 Drummond Street, Euston Square. Being at the full period of pregnancy, the liquor amnii began to escape at 6 P.M., 22d June, 1842. Labour pains commenced at 1 A.M., of the 23d, and Mr. Kennedy, of Tavistock Square, saw her at 3 A.M. The pains were feeble till 11, and then for several hours after they become more active and frequent. At 3 P.M., a small loop of the funis, along with the head, was felt at the brim of the pelvis. The pains gradually ceased after 3, and she complained of cramps about the stomach. At 6, there was no dangerous symptom; but at 8, violent pain was felt in the fundus uteri. At 10 P.M., I first saw her with Mr. Kennedy; she was then sitting up in bed, supported by pillows; the breathing hurried and pulse feeble, with sickness and vomiting. She complained of excruciating pain in the upper part of the uterus; which she could not bear to be touched, and which felt remarkably hard and irregular. Slight hemorrhage from the uterus; the funis still felt, but the presenting part had receded beyond the reach of the finger. I passed the hand into the uterus, and felt the placenta adhering to the posterior wall, but could feel no part of the child. So violent was the pain produced by the hand, that I withdrew it without making any attempt to pass it through the opening in the uterus to extract the child. A large opiate was given, and she fell asleep for a short time. Feeling anxious that she should not die undelivered, we resolved to make an attempt to extract the child. I again passed the hand into the uterus, carried it forward through a great rent in the fundus, when it came in contact with one of the feet, which I seized and brought back into the uterus. I had little difficulty, in extracting the trunk and extremities of the child, but the head would not follow, though great force was employed, till perforated behind one of the ears, and then several pints of fluid escaped. Abdominal inflammation followed, the acute symptoms of which yielded to treatment; but fifteen days after delivery fæculent matter began to pass by the vagina, and the whole continued to escape through the vagina for thirteen days after, when she died. The omentum and all the parts around the uterus were glued together. The lower part of the ilium adhered firmly to the fundus uteri. On separating the ilium, a large irregular opening was seen in the uterus, the edges of which were in a black, sloughing state. The ilium was perforated in the part corresponding with the rent in the uterus, and through this opening the fæculent matter had passed from the ilium, through the cavity of the uterus, into the vagina. Had the cause of the difficulty been ascertained sufficiently early in this and the four preceding fatal cases of hydrocephalus in the fœtus, it is impossible to doubt that several of them, if not all, would have ended favourably.

In a case of difficult labour from hydrocephalic fœtus, recorded by Perfect, the woman died in two hours, after being delivered. The head was twenty-four inches in circumference.

Smellie has related four cases of hydrocephalus, one of which occurred in 1747, and he states that after the orifice of the uterus was largely dilated, the head continued long high up at the brim, and felt in such an uncommon manner that he was for some time uncertain whether it was the head or breech, but the waters being discharged it was pushed a little lower down; then he felt the hairy scalp, and perceived the head was dropsical from the looseness of the bones, and the great distance between them. The head was expelled without artificial help. Another case occurred in 1753. It was the first child. The membranes and waters opened the os uteri in a very slow manner, and when they came down to the middle of the vagina, felt as if there had been one set of membranes within another, though the internal seemed to be much thicker than the external. But before the os uteri was fully opened, the membranes broke, and then I discovered the other was the hairy scalp, pushed down by water contained in the skull. This the pains forced down lower and lower, so that the os internum being fully opened, it stretched the vagina and the os externum in the same manner as they are commonly dilated by the membranes and waters of the secundines; and he says, I felt the bones of the skull loose and riding one over another. The head was expelled without assistance, but a good deal of force was required to extract the body and shoulders, because the abdomen was swollen. The child had been dead ten days. These cases prove that the diagnosis is sometimes most difficult in protracted labour from an hydrocephalic state of the fœtus, and that it has often terminated fatally. I have related these and the following cases with the view of rendering you cautious how you employ ergot of rye, or any other means, to excite strong uterine contractions, before the presenting part has been clearly ascertained.

Smellie mentions another case in which flooding took place before delivery, and all his efforts to extract the head after turning were useless in consequence of hydrocephalus. He exerted great force, and continued to increase it till he found the neck and mouth to give way. A curved crotchet was then passed up along the child's head to the upper and convex part of the forehead, and, on pulling forcibly, the bones of the skull collapsed, and a quantity of water escaped. The head was about a third larger than common, and the woman died eighteen or twenty days after. The delivery would have been more easily effected by perforating the back part of the head, and then extracting it with the crotchet, which he did in another case. In the fourth volume of the Medico-Chirurgical Transactions, Sir C. Bell relates a case of hyprocephalus in which the uterus was ruptured. Dr. Ramsbotham relates three cases, two of which terminated fatally.

Ascites in the fœtus is a still more rare disease than hydrocephalus, and it may prevent the body of the child following the head through the pelvis. The same effect is produced by distension of the abdomen with air where the fœtus is dead, and where the kidneys and bladder are distended with urine in consequence of the urethra and ureters being impervious. In all these cases, where any difficulty arises in extracting the trunk of the child, the perforator should be passed up, and the air and fluid in the abdomen should be evacuated.

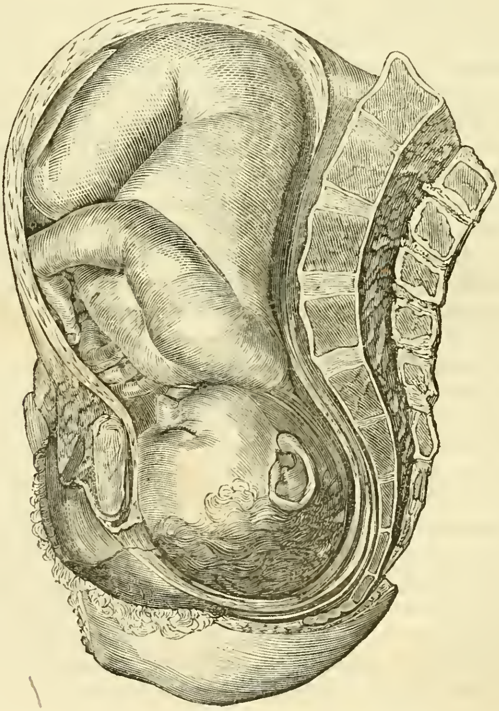
LECTURE XXIV.

PROTRACTED AND DIFFICULT LABOURS, FROM THE FOREHEAD OF THE CHILD BEING INCLINED TO THE SYMPHYSIS PUBIS; PRESENTATION OF THE FACE AND SUPERIOR EXTREMITY WITH THE HEAD.

The head may present, but the vertex may be in the hollow of the *sacrum, and the forehead turned or inclined towards the pubes.* If the head and pelvis are of the usual dimensions, and the uterine contractions strong, the forehead and face are in most cases gradually forced downward under the symphysis pubis, through the os externum, and the delivery is safely accomplished without any artificial assistance, or the nature of the presentation even being ascertained, till the occiput is found directed to the coccyx, and the face to the pubes, after the expulsion of the head. But if the head be large, the pelvis narrow, and the labour is in consequence protracted, the kind of presentation is discovered, on making a more careful examination, by feeling the anterior fontanelle towards the symphysis pubis; or even the root of the nose and eyes may be touched, if the finger is passed sufficiently high up behind the symphysis. In these cases the presenting part is unusually flat towards the arch of the pubes, the parietal bones do not overlap one another in the ordinary manner, the swelling of the scalp does not form so speedily, and not only is the cavity of the sacrum imperfectly filled up with the occiput, but the sagittal suture may be distinctly traced backward to the posterior fontanelle, if the head has not remained long in the pelvis and suffered much from pressure. When this is found to be the position of the fœtal head, it does not follow, as Dr. Denman observes, that any thing ought to be done; but we are to wait a longer time, because as experience has proved that the head in this position may be, and almost universally is, ultimately expelled by the natural efforts, so long as these are continued no artificial help should be given or attempted. But when the pains cease, or when we are fully convinced that they are unequal to the exigencies of the case, such assistance must be given as the situation of the patient may require and allow. With this position of the head, besides the greater length of time which may be required for moulding and expelling it, there will also be a greater distension of the external parts; because the hind-head cannot be cleared of the perineum before the chin has descended as low as the inferior edge of the symphysis of the ossa pubis; by which an inconvenience is produced equal to what an increased depth of the cavity of the pelvis would occasion, or a deficiency in the arch of the pubes. "This kind of labour," says Dr. Merriman, "is not in general very unmanageable. The head may be longer than ordinary in passing through the pelvis; but if this be well formed, and the pains are strong, it will be at length excluded, and in the majority of cases the child will be born alive." In the treatment of these cases, then, except guarding the perineum with more than common care while the head is passing through the outlet of the pelvis, nothing particular is required to be done. If the labour, however, is much protracted, the head of the child, as represented in the twenty-first table of Smellie's Plates, which I now show you, becomes compressed into a longish form, with a tumour on the vertex, and the natural powers may be insufficient for its expulsion. Various methods have been recommended and adopted by different practitioners under these circumstances. Smellie was accustomed, in these and in all cases of face presentation, even when the liquor amnii was evacuated, the first stage of labour completed, and the head of the child low in the pelvis, to attempt to force back the presenting part, and bring down the feet. If you read the histories of some of the cases recorded in his third volume, you will find that, about the year 1746, this was his general practice, but that it was almost always unsuccessful. The operation of turning is never now employed in this country by experienced practitioners, where the membranes have been ruptured, and the head has passed through the os uteri into the cavity of the pelvis. Turning, where the head has advanced so far in the pelvis, is truly a most dangerous operation both for the mother and child, and should never be attempted. If the child cannot be delivered with the labour pains, or turned and brought footling, the forceps, says Smellie, are to be applied on the head, as described in this figure, and brought along as it presents; but if that cannot be done without running the risk of tearing the perineum, and even the vagina and rectum of the woman, the forehead must be turned backwards to the sacrum. To do this more effectually the operator must grasp firmly with both hands the handles of the forceps, and at the same time pushing upwards, raise the head as high as possible in order to turn the forehead to one side, by which it is brought into the natural position. This done, the head may be brought and delivered as in natural labour. In several cases of this kind he was obliged to employ the crotchet after trying the forceps. With the short straight forceps the head may be turned slightly round with safety and advantage, as you depress the handles and bring the forehead and face out under the symphysis pubis; but I believe it to be impossible to perform the operation here described by Smellie, with the long curved forceps represented in the figure, without destroying the child or lacerating the vagina.

"In this case," Dr. F. H. Ramsbotham correctly observes, "we have the choice of two methods by which to extract the head: we may either bring the head under the pubes, making a quarter turn of the half pelvis, or we may make a three-quarter turn, and throw it into the hollow of the sacrum. Of these modes I should certainly prefer that in which there is the least turn to be made,

Fig. 42.

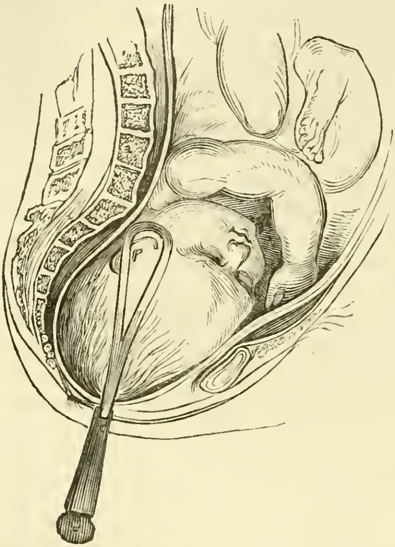


namely, with the face under the pubes, provided it could be effected; because we are less likely to do injury to the mother and also the child. If we make a three-quarter turn we may injure the mother's parts by bruising, and perhaps by laceration; and we might even destroy the child; for if its body be strongly embraced by the contracted uterus, and do not follow the extensive turn which we cause the head to make, we must infallibly twist its neck to a great extent, and we might dislocate the vertebræ, to the destruction of its life."

A safer mode was sometimes employed by Smellie to turn the forehead round to the sacrum. In describing a case of this sort, he states that he "gently opened the os externum during every pain, raising the head a little when the pain began to abate, and moving the forehead to the left side of the sacrum, by which means he effected the delivery." Dr. Merriman says this appears to have been his common practice in such presentations, and that a somewhat similar manœuvre was recommended by Exton. "It is not a little extraordinary," he further observes, "that the late Dr. John Clarke was unacquainted with this direction of Smellie. In his paper on the management of cases in which the face of the child presents towards the os pubis, Dr. Clarke evidently thought that he proposed a novel practice when he recommended to push the forehead round towards the sacrum. He says, "all the best writers upon the practice of midwifery have taken notice of this cause of difficulty in labours; but they have been contented with describing it, without suggesting any means more especially suited to this case." Dr. Clarke directs either one or two fingers to be passed up, between the left side of the head, near the coronal suture or the temple and the symphysis pubis, and steady pressure to be made during a pain against the frontal or parietal bone. Sometimes this method is attended with success, but it most frequently fails, and the head returns to its original position before the pressure was begun to be made. I cannot agree with Dr. Burns in thinking that it would be justifiable, where the presentation was discovered early, to rupture the membranes and turn the vertex round. From all that I have seen of these cases, I am disposed to believe that it is best to leave them to the natural efforts, and to avoid all interference, — all attempts to change the position, while the pains continue regular, and the head advances, however slowly. Dr. Merriman has very recently informed me that he entirely coincides in this opinion. If exhaustion should take place it will then become necessary to deliver artificially, in the manner which will afterwards be described.

The preceding figure from Smellie's engravings represents the vertex in the cavity of the sacrum, and the forehead turned to the pubes. When the head is small, he says, and the pelvis large, the parietal bones and the forehead will, in this case, as they are forced downwards by the labour pains, gra dually dilate the os externum, and stretch the parts between that and the coccyx in form of a large tumour, till the part comes down below the pubes, when the head will be safely delivered. But if the same be large, and the pelvis narrow, the difficulty will be greater, and the child in danger, as in Fig. 43, also copied and slightly altered from Smellie; the short, straight forceps being represented instead of the long curved forceps you have seen in the original engraving. By looking at this figure you will be able to form a good idea of the extent to which the neck of the child would be twisted by turning the face entirely round into the hollow of the sacrum.

Fig. 43.

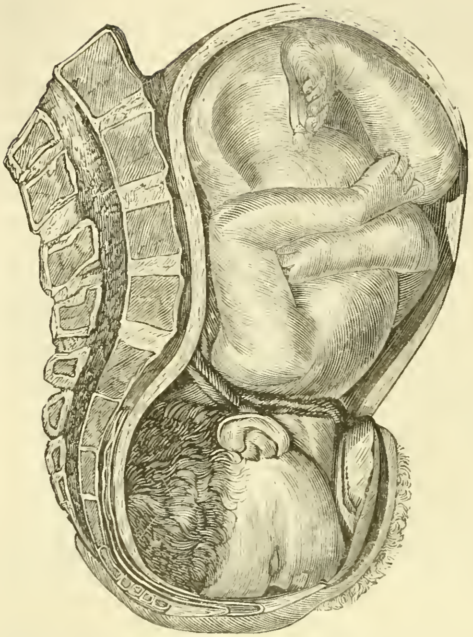


PROTRACTED AND DIFFICULT LABOURS FROM PRESENTATION OF THE FACE.

The face is readily distinguished from every other part of the fœtus by the inequality of its surface, and by the eyes, nostrils, mouth, and chin. The mouth, as represented in the following figures from Smellie's Plates, may be either under the symphysis pubis, with the vertex occupying the hollow of the sacrum, or it may be situated close to the lower end of the sacrum and coccyx, with the vertex behind the symphysis pubis. The first of these positions is considered the most frequent and favourable; but the head, in a great proportion of cases, whether it be situated in this or in the second position, is expelled by the natural efforts, though a longer period than usual be required for the completion of the labour. The difficulty arises from the bones of the face being incapable of compression, or of being moulded into the form of the pelvis, like the bones of the cranium, and from the head occupying a greater space in the pelvis than natural. But the head, nevertheless, in a great proportion of cases in which the face presents, passes through the pelvis without artificial assistance, and no unpleasant consequences is produced, except a swollen state of the child's face from the long-continued pressure, but which soon disappears. Portal was the first who observed that cases of face presentation, though somewhat tedious, usually terminate without the assistance of art, and recommended them to be treated like cases of natural labour. Smellie, as I have already stated, had recourse to the operation of turning, and bringing down the feet in face cases; but I am satisfied that the practice is highly objectionable under any circumstances, and I have not seen a single instance in which it would have been proper. Dr. Merriman, however, seems rather to be of opinion that there are cases, although he does not state that he has actually met with them, in which it might be right to turn and bring down the feet. "I am quite convinced," he says, "that, as a general rule, it is wrong to turn in face cases; yet under some very favourable circumstances such an operation may perhaps be admissible. If, for instance, the head of the child were found lying above the brim of the pelvis, the membranes unruptured, the os uteri well dilated, and the vagina and the perineum in a state of relaxation, the probability of saving the life of the child would be considerable, and might justify the operator in having recourse to such a proceeding." My firm belief is, that the child, even under such favourable circumstances, would have a far better chance to be born alive if the labour were left wholly to nature, and, if the natural powers were inadequate, to extract it with the forceps. Professor Bang relates ten cases of face presentation; in three, the child was turned, and in every case was still-born. In four, after ineffectual attempts to turn, the children were at length expelled by the pains, and were all still-born. In one, the forceps was used about twenty-four hours after the labour began: the child was dead. Two were left entirely to nature, and the children were born alive. "In most of these cases," observes Dr. Merriman, "turning seems to have been undertaken sooner than would allow the parts to be properly dilated." "In thirty-three cases," says Dr. Collins, "the face of the child presented; four of the thirty-three were still-born: with the first, the labour lasted eight hours, and with the fourth, seven hours; all were delivered without assistance. In twelve cases the head presented with the face to the pubes: six of the twelve children were still-born: with the first, the mother had been a considerable time in labour before admission; with the second, there were three convolutions of the funis on the neck, the labour lasted sixteen hours, and the forehead suffered much from compression; with the third, the mother was deformed, and the pelvis very defective; with the fourth, the mother had been long in labour before admission: this was her second pregnancy, and both deliveries were effected with the crotchet; the fifth was a woman with a deformed pelvis; with the sixth, the funis and hand descended with the head. The third, fourth, and fifth, were delivered with the crotchet." By reference to these cases, Dr. Collins states that it will be clearly seen that the position of the child did not, in any instance, render artificial delivery necessary.

Smellie's twenty-third table shows, in a lateral view, the face

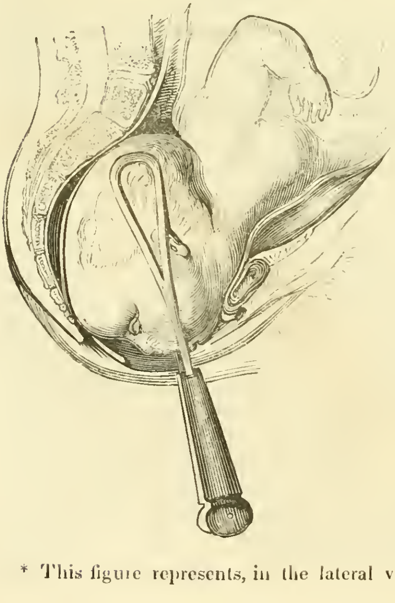
Fig. 44.



of the child presenting, and forced down into the lower part of the pelvis; the chin being below the pubes, and the vertex in the concavity of the os sacrum; the waters likewise being all discharged: the uterus appears closely joined to the body of the child, round the neck of which is one circumvolution of the funis.

"When the pelvis is large," he observes, "the head, if small, will come along in this position, and the child be saved; for as the head advances lower, the face and forehead will stretch the parts between the frænum labiorum and coccyx in form of a large tumour. As the os externum likewise is dilated, the face will be forced through it; the under part of the chin will rise upwards over the anterior part of the pubes, and the forehead, vertex, and occiput, turn from the parts below. If the head, however, is large, it will be detained either when higher, or in this position. In this case, if the position cannot be altered to the natural, the child ought to be turned, and delivered footling." "If the pelvis, however, is narrow, and the waters are not all gone, the vertex should, if possible, be brought to present: but if the uterus is so closely contracted that this cannot be effected, on account of the strong pres-

Fig. 45.*



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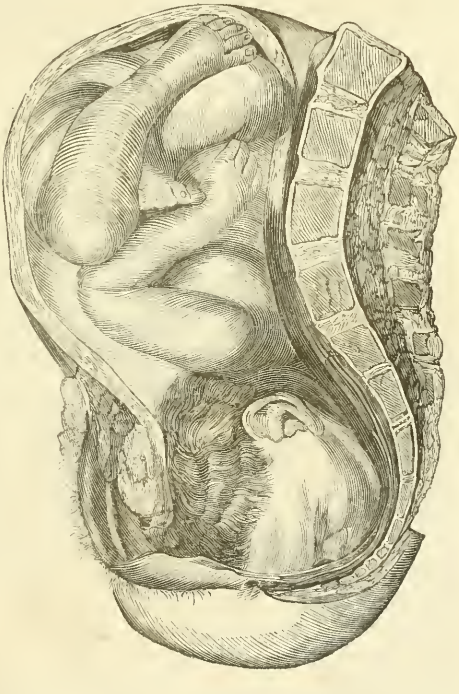
* This figure represents, in the lateral view, the head of the fœtus in the same

sure of the same, and slipperiness of the child's head, in this case the method directed in the above table is to be taken."

"In this case," says Smellie, "if the head cannot be raised, and pushed up into the uterus, it ought to be delivered by the forceps, in order to save the child. This position of the chin to the pubes is one of the safest cases, where the face presents, and is most easily delivered with the forceps, the manner of introducing which over the ears is shown in the above table. The patient must lie on the back, with her breech a little over the bed, her legs and thighs being supported by an assistant sitting on each side. After the parts have been slowly dilated with the hands of the operator, and the forceps introduced and properly fixed along the ears of the child, the head is to be brought down by degrees, that the parts below the os externum may be gradually stretched; the chin then is to be raised over the pubes, whilst the forehead, fontanelle, and occiput, are brought out slowly from the perineum and fundament, to prevent the same from being hurt or lacerated. But if the fœtus cannot be extracted with the forceps, the delivery must be left to the labour pains as long as the patient is in no danger; but if the danger is apparent, the head must be delivered with the crotchet. When the face presents, and the chin is to the side of the pelvis, the patient must lie on her side; and after the forceps are forced along the ears, the chin is to be brought down to the lower part of the os ischium, and then turned out below the pubes, and delivered in a slow manner, as in Fig. 45. In these awkward presentations the delivery should always be trusted to the natural pains as long as the patient is in no danger.

Fig. 46.*



Labour is sometimes protracted and difficult, from one of the extremities descending along with the head.

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position as in the former figure; but the delivery is supposed to be retarded from the largeness of the head, or a narrow pelvis.

* This figure shows, in a lateral view of the right side, the face of the fœtus pre-

The hand of the child may be felt closely applied, in some cases, to the side of the head, before it has entered the brim of the pelvis; and if the pelvis is large, and the uterine action is strong, they may be expelled together without assistance. But, under the most favourable circumstances, the hand adds much to the size of the head; and if the pelvis be small or distorted, they become impacted in the brim or outlet. The difficulty is still greater if the arm descends along with the head or before it, and the natural efforts may be insufficient, in this case, for the completion of the labour. Whether it be the hand or arm which presents along with the head, it is advisable in all cases to push it up beyond the head, and to hold it up until the head has come down so low as to occupy the brim of the pelvis completely, and it is impossible for the hand or arm again to descend by the side of the head or before it, and impede its progress through the pelvis. You will not succeed in pushing the hand or arm above the head of the child unless you introduce the whole of your hand into the vagina, and partially through the os uteri, and with your fingers press up and hold up the hand or arm of the child between the pains, until the head has sunk down so far as to be clear of the obstruction. In some cases, by doing this, a labour which has been protracted for many hours is brought, after a few pains, to a successful termination. Without introducing your whole hand into the vagina, you will most frequently fail in obviating the difficulty, and you may be compelled to have recourse to the forceps, or to the perforator, if the head and arm should become jammed in the brim. In a case which I lately saw, in consultation with Mr. Taylor, of Leicester Square, the head, left arm, and funis of the child, without pulsation, presented; the membranes were ruptured, and the uterus closely contracted around the child. As the child was dead, I opened the head and drew it readily down before the arm, and delivered. Had the cord been pulsating, the operation of turning, I suppose, would have been the proper practice, though under the unfavourable circumstances, there would have been little or no chance of preserving the child's life, and the uterus might have been injured in the delivery.

A foot may present along with the head, and obstruct its progress through the brim of the pelvis. On the 1st of June, 1842, at mid-day, I saw a case in Buckingham Place, Fitzroy Square, in which the head, the funis, and a foot presented. Labour began the previous afternoon: at 6 o'clock the liquor amnii escaped, and the midwife felt the head, a foot, and a great loop of the funis. She thought the proper practice was to put back the foot, and this she attempted to do for six hours. At midnight she requested a surgeon to see the case, and deliver the woman; but he did nothing except administer two doses of the ergot of rye. In this

senting as in the last two figures, but in the contrary position; that is, with the chin to the os sacrum, and the bregma to the pubes, the waters evacuated, and the uterus contracted. The same treatment is recommended.

condition the patient remained till 12 o'clock the next day, when I saw her. As there was no pulsation in the cord, the only subject for consideration was, how the patient might be relieved with the least risk. I passed up my hand into the vagina, grasped the foot, and brought down the nates, while, at the same time, I pushed the head aside and easily delivered. If the head had not gone up by the pressure, I would have opened it, and delivered with the crotchet, without paying any attention whatever to the foot. In a protracted labour which came under the care of Dr. John Ramsbotham in 1820, he found the head above the brim of the pelvis, with the foot down by its side. Without withdrawing the hand, which had been pressed into the vagina, he pushed up the foot, and at that moment a strong uterine contraction coming on, the head was brought down into the brim, so that the foot was left above. Keeping the hand in that situation till another pain came on, he found the head descend without the foot. In pushing up the foot a hand also was felt just by the side of the head. The case was then left to the natural action of the uterus, and in about two hours a living child was expelled.

LECTURE XXV.

ON PROTRACTED AND DIFFICULT LABOURS.

6. ORIGINAL SMALLNESS OF THE PELVIS, DISTORTION, EXOSTOSIS, AND OTHER MORBID CONDITIONS, ARE THE MOST FREQUENT CAUSES OF DIFFICULT LABOUR.

About one-sixth of all the cases of difficult parturition which I have observed in London, depended upon narrowness of the pelvis, from arrest of development, and distortion. When the pelvis does not expand in the usual manner at the age of maturity, the brim, cavity, and outlet, remain through life smaller than in the ordinary standard female pelvis, without being distorted. In some persons there is no distortion, yet the distance between the base of the sacrum and the symphysis pubis does not exceed three inches, so that a fœtal head of the ordinary size cannot pass through it; and all the consequences follow, in labour, which usually take place when a disproportion exists, from distortion or any other cause, between the dimensions of the pelvis and the head of the child. This original smallness of the pelvis exists in a considerable number of women whose spinal column and long cylindrical bones are not unusually bent, and in whom there is no appearance of rickets, or symptom to excite a suspicion, before the commencement of labour, that the capacity of the pelvis is defective. The effects produced upon the pelvis by softening of the bones from rickets and malacosteon, you have already seen in a variety of specimens of distorted pelvis, removed from the bodies of women who had died in consequence of the effects produced upon the soft parts from obstruction to the progress of the head of the child during labour.

In small or slightly distorted pelves, where the short diameters of the brim and outlet exceed three inches, and the long bones of the extremities are not bent, when labour comes on the os uteri dilates in the usual manner, and the head enters the brim, but it passes through with great difficulty. The parietal bones overlap one another, even in the intervals of the pains, and, if the labour is much protracted, a large swelling gradually forms under the scalp, and for hours it may be doubtful whether the uterine contractions will be sufficiently powerful to force the head into the cavity of the pelvis. When it has cleared the brim, if the outlet of the pelvis be less contracted, a few pains only may be required to complete the labour, and the child may be born alive without having sustained any injury. But when the contraction of the brim is greater, the head, after entering more or less deeply into it, ceases to advance, and becomes gradually more and more firmly compressed between the base of the sacrum and symphysis pubis, and at last so completely impacted, locked, or, as it has been expressively called, nailed in the pelvis, that the finger cannot be passed up around the head, and the pains, however violent, have no effect in moving it forward. This state has been termed enclavement or paragomphosis of the head, by foreign writers, and if it is allowed to continue many hours, and the uterus is acting powerfully, the most injurious consequences usually follow both to the child and mother. In *this* fœtal head which I now show you, the right parietal bone, which was applied to the projecting base of the sacrum in labour, has been depressed and fractured. Slighter compression of the head, long continued, usually destroys the life of the child before the labour is finished. If it is born alive death soon afterwards takes place from extravasation of blood upon the brain, producing apoplexy and convulsions.

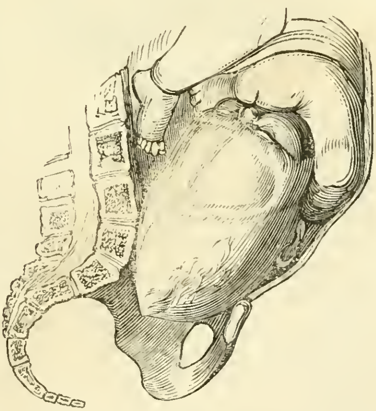
The soft parts of the mother surrounding the head become hot, dry, tumid, and inflamed, and all the injurious effects of pressure and interrupted circulation of the blood are sooner or later experienced. You cannot pass up the finger around the head without difficulty, and causing more or less distress to the patient; the discharges from the vagina become acrid and offensive; retention or urine takes place, from the pressure of the head on the neck of the bladder and urethra; the abdomen becomes tender; the tongue loaded with urgent thirst; the pulse rapid and feeble; and more or less general exhaustion ensues. In some cases rupture of the uterus takes place in the course of a few hours after the head has become wedged in the brim of a slightly distorted pelvis. Not unfrequently death follows artificial delivery in no long time, when the head of the child has been allowed to remain too long impacted in the pelvis, and still oftener sloughing of the vagina, bladder, and rectum, takes place.

In cases of slighter distortion of the pelvis, it is impossible to predict at the commencement of labour whether the head will pass or not, and while it continues to advance, and no unfavourable symptoms are present, you ought not to interfere — wait patiently, and see what nature can do. If the head descends so low into the cavity of the pelvis that an ear can be felt, and the os uteri is fully dilated, and there is room to pass up the blades of the forceps without the employment of much force, it is always proper, when delivery becomes necessary, to attempt to extract the head with the forceps. It is necessary, however, to remember that sloughing is apt to follow the use of the forceps, where the soft parts have been long pressed upon by the head, and that perforation of the head is a much safer operation for the mother, when the distortion is considerable.

The employment of the long forceps, in cases of distorted pelvis, has been recommended by Baudelocque, Boivin, Lachapelle, Capuron, Maygrier, Velpeau, and Flammant, whose works contain ample instructions for its use, before the head of the child has entered the brim of the pelvis; and the last of these writers has expressed his belief that the instrument is more frequently required while the head of the child remains above the superior aperture of the pelvis, than after it has descended into the cavity.

In this country there are no practitioners of judgment and experience who have frequent recourse to the forceps, or who employ it before the orifice of the uterus is fully dilated, and the head of the child has descended so low into the pelvis that an ear can be felt, and the relative position of the head to the pelvis accurately ascertained. The instrument is very seldom used in England where the pelvis is much distorted, or where the soft parts are in a rigid and swollen state, but it is had recourse to where delivery becomes necessary in consequence of exhaustion, hemorrhage, convulsions, and other accidents which endanger the life of the mother. It is used solely with the view of supplying that power which the uterus does not possess.

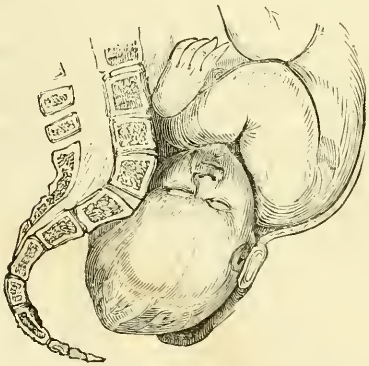
Fig. 47.



Where the pelvis is distorted in a high degree, as in some of the specimens before you on the table, where the distance from the base of the sacrum to the symphysis pubis varies from an inch and a half to two inches and a half, the head of a full-grown child cannot enter the brim, however long the labour may be allowed to continue. The membranes burst, and the liquor amnii escapes as in natural labour, and the uterus closely contracts around the body of the child, and acts powerfully upon it, but the head presses upon the uterus at a distance from the orifice, and it is never completely dilated. In some cases, where the labour has lasted from forty-eight to sixty hours, the os uteri has not been more than half dilated, and the whole head of the child, swollen by the pressure, has remained entirely within the uterus above the brim, and pushed forward by the base of the sacrum over the symphysis pubis. Figure 47, from Smellie's twenty-eighth table, gives a side view of a distorted pelvis, with the head of a full-grown fœtus squeezed into the brim, the parietal bones decussating each other, and compressed into a conical form. "This table shows," says Smellie, "the impossibility, in such a case, to save the child unless by the Cæsarean operation, which ought, however, never to be performed, excepting when it is impracticable to deliver at all by any other method. Even in this case, after the upper part of the head is diminished in bulk, and the bones are extracted, the greatest force must be applied, in order to extract the bones of the fœtus and basis of the skull, as well as the body of the fœtus."

The following figure from Smellie's twenty second table gives a lateral view of a distorted pelvis, divided longitudinally, with the head of a fœtus of the seventh month passing the same. "The head of the fœtus here," he says, "though small, is with difficulty squeezed down into the pelvis, and changed from a round to an oblong form before it can pass, there being only the space of two inches and a quarter between the projection of the superior part of the sacrum and ossa pubis. If the head is soon delivered, the child may be born alive; but if it continues in this manner many hours, it is in danger of being lost, on account of the long pressure on the brain; to prevent which, if the labour pains are not sufficiently strong, the head may be helpeda long with the forceps." "This figure may serve as an example of the extreme degree of distortion of the pelvis, between which and the well-formed one are many intermediate degrees, according to which the difficulty of delivery must increase or diminish, as well from the disproportion of the pelvis and head of the fœtus — all which cases require the greatest caution, both as to the safety and management of the mother and child."

Fig. 48.



Where there exists a great degree of distortion of the brim of the pelvis, you may be unable to determine positively the distance between the base of the sacrum and symphysis pubis; and it is not necessary for practical purposes to do so with mathematical accuracy; but when it is under two inches and a half, you will readily discover, if you have had considerable experience, on making the ordinary examination, from the unusual manner in which the sacrum projects, that it is impossible for a child at the full period to pass through it. If labour has commenced at the full period of pregnancy, and you discover before it has continued many hours that the pelvis is greatly distorted, and that the child cannot possibly pass alive, no advantage can result from allowing the labour to endure till the patient is exhausted, and you are satisfied that the difficulty cannot be overcome by the powers of the constitution. In such a case delay is dangerous, and there is nothing which can save the woman's life but opening the head of the child with the perforator, and extracting it with the crotchet. But this should never be had recourse to without a regular consultation of experienced practitioners, and before it has been placed beyond all doubt, by the most careful investigation, that the delivery can be accomplished in no other manner so as to preserve the mother's life.

In the greater number of cases of difficult labour from a high degree of distortion of the pelvis, which have come under my observation, where it has been the first child, the process has been allowed to go on till the efforts of the patient had been nearly discontinued, or had ceased entirely, and the favourable period for operating was lost. In some cases, even when the duration of the labour, and the local and constitutional symptoms, have made it manifest that such interference was justifiable and necessary. I have unfortunately delayed too long to deliver, in consequence of employing the stethoscope, and ascertaining that the child was alive. In cases of extreme distortion of the brim of the pelvis the proper practice is to perforate the head, as soon as the os uteri is sufficiently dilated to admit of the operation being done with safety, and afterwards leaving the patient in labour till the head has partially entered the brim, and the os uteri is considerably dilated. There can be no doubt that, in some cases, it is right to interfere before we certainly know that the child has been destroyed by the pressure; but we have nothing here to do with the question respecting the life or death of the child; our conduct will be biassed if we endeavour to solve this question. We have only to determine positively that delivery is absolutely necessity to save the mother's life, and that it is impossible for the head of the child to pass till its volume is reduced. Parè, Guillemeau, Mauriceau, Portal, Puzos, Levret, Smellie, and all the best accoucheurs who have since appeared in Britain, have performed the operation of craniotomy in many cases of distortion from rickets and malacosteon, without reference to the condition of the fœtus. "True religion, and the common sense of mankind," observes Dr. Denman, "appear to have nothing contradictory. The doctrine they teach, of its being our duty to do all the good in our power, and to avoid all the mischief we can, is applicable to the exigencies of every state, and we may be easily reconciled to it on the present occasion. In some cases of difficult parturition it is not possible that the lives both of the mother and child should be preserved. Of the life or death of the mother we can under all circumstances be assured: of the life or death of the child there is often reason to doubt, when we are called upon to decide and to act. The destruction of the mother would not, in the generality of cases which may bring the operation of which we are speaking under contemplation, contribute to the preservation of the child; but the treatment of the child as if it were already dead, with as much certainty of success as is found in other operations, secures the life of the parent. It then becomes our duty, and is agreeable to our reason, to pursue that conduct which will give us the most probable chance of doing good; that is, of saving one life when two lives cannot possibly be preserved."

"The only means of effecting delivery," observes Dr. Collins, "where the disproportion between the head of the child and the pelvis is so great as to prevent us reaching the ear with the finger, is by reducing the size of the head, and using the crotchet. This is, however, an operation that *no inducement* should tempt any individual to perform, except the imperative duty of saving the life of the mother when placed in imminent danger. I have no difficulty in stating, that after the most anxious and minute attention to this point, that where the patient has been properly treated from the commencement of her labour; where strict attention has been paid to keep her cool, her mind easy; where stimulants of all kinds have been prohibited, and the necessary attention paid to the state of the bowels and bladder; that, under such management, the death of the child takes place in laborious and difficult labour before the symptoms become so alarming as to cause any experienced physician to lessen the head. This is a fact which I have ascertained beyond all doubt by the stethoscope, the use of which has exhibited to me the great errors I committed before I was acquainted with its application to midwifery, viz., in delaying delivery, often, I have no doubt, so as to render the result precarious in the extreme, and in some cases even fatal."

The operation of craniotomy is now performed by all British practitioners of reputation, whether the child be alive or dead, if the condition of the mother is such as to render delivery absolutely necessary, and the head of the child is beyond the reach of the forceps, or where, from distortion of the pelvis, or rigidity of the os uteri and vagina, it cannot be extracted if its volume is not reduced. This operation is performed from a conscientious belief and deep conviction that if neglected to be done at a sufficiently early period, the mother's life will be sacrificed, and the life of the mother is considered to be much more important than that of the child. Some continental writers affirm, but, I believe, unjustly, that in England we have frequently recourse to craniotomy without due consideration, and without proper regard to the life of the child; and, whatever the state of the parent may be, they refuse to open the head till they can obtain certain evidence, which, in some cases, it is impossible to obtain, that it is dead. "Nothing could excuse the conduct of the practitioner," says Baudelocque, "who would perforate the head of a child without previously knowing with certainty that it was not alive, a circumstance which can only authorize us to employ the perforator and crotchet." By following this erroneous principle, the lives of both mother and child would, I believe, in the majority of cases, be sacrificed.

In numerous cases of distortion of the pelvis, the induction of premature labour has been successfully employed in this country, and it is now ascertained that the operation, which will be described hereafter, is attended with little risk to the mother, and that nearly one-half of the children are born alive, and continue to live, where it is performed after the seventh month of pregnancy. In cases of great distortion of the pelvis, the induction of premature labour at an early period of pregnancy, before the sixth month, is likewise known to be a safe operation, and to render craniotomy and the Cæsarean operation wholly unnecessary. The greater number of the best practical writers on midwifery in this country have considered the induction of premature labour applicable only to cases of slighter distortion, and have considered it improper in first pregnancies, and before seven complete months of utero-gestation have elapsed.

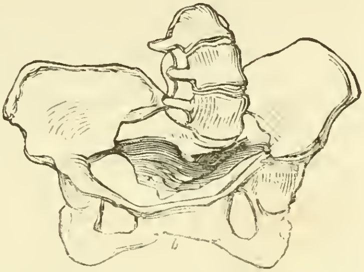
Little has been said by them respecting the safety and utility of the operation in cases of great distortion, to obviate the danger to the mother of fatal contusion or laceration of the uterus and vagina, which are always to be dreaded when much force is required after perforation to extract the head of the child. "If the pelvis be so far reduced in its dimensions," observes Dr. Denman, "as not to allow the head of a child of such a size as to give hopes of its living to pass through it, the operation cannot be attended with success. It is in those cases only in which there is a reduction of the dimensions of the pelvis to a certain degree, and not beyond that degree, that this operation ought to be proposed or can succeed." "As the primary object is to preserve the life of the child," says Dr. Merriman, "the operation should never be performed till seven complete months of utero-gestation have elapsed." As early as 1769, it was proposed by Dr. Cooper to induce abortion in cases of extreme distortion of the pelvis. "Before I conclude," he remarks, in his history of a fatal case of Cæsarean section, "allow me to propose the following question, viz., 'In such cases where it is certainly known that a mature child cannot possibly be delivered in the ordinary way alive, would it not be consistent with reason and conscience, for the preservation of the mother, to produce an abortion?'"

I have met with two cases of such great distortion from rickets in the first pregnancy, that I have induced premature labour in the seventh month, and was in consequence enabled to complete the delivery with far less difficulty and danger than it could otherwise have been done. I shall read to you the details of these cases, with the view of impressing upon you the importance of the principle, and of inducing you to perform the same operation at an earlier period of the first pregnancy than the seventh month, if you should meet with any individual whose pelvis is so distorted that a child cannot then pass through it, or in whom the cavity of the pelvis is filled up with large exostoses and tumours. By having recourse to this operation in the early months, even before the fifth month, the Cæsarean operation can never be necessary except in those cases in which the condition of the pelvis has not been ascertained till the full period. In the case of extreme distortion from malacosteon, related by Sir Charles Bell, had the membranes of the ovum been perforated in the second or third month, the necessity of the Cæsarean operation would not have occurred, and the progress of the disease would probably, for a time, at least, have been arrested.

On Tuesday, January 9, 1838, Mr. Robertson, of Albemarle Street, requested me to see a woman whose pelvis and extremities were greatly distorted by rickets, and who was in the seventh month of her pregnancy. From an examination of the pelvis, we thought the short diameter of the brim was considerably under three inches, and that a child at the full period could not pass through it without having the volume reduced by craniotomy, and that the operation would be attended by difficult y and danger. We resolved, in consequence, to induce premature labour, though it was the first pregnancy, and though a rule had been laid down by the most judicious writers that the practice should never be adopted till experience had decidedly proved that the mother was incapable of bearing a full-grown child alive. The os uteri was situated high up and directed backward, but I experienced no difficulty in introducing the stiletted catheter, and perforating the membranes. The liquor amnii began to escape immediately after, and continued to flow for three days, and labour pains then came on. For forty-eight hours, they were feeble and irregular. Mr. Robertson then found the os uteri considerably dilated, and a foot of the child protruding through it. He extracted the breech and extremities without difficulty, but he could not succeed in drawing the head through the brim into the cavity of the pelvis. I passed the point of the perforator up to the back part of the head without difficulty, and having made a large opening through the integuments and skull, the brain began to escape. The point of the crotchet was then introduced into the opening, and fixed upon the base; and by drawing downwards and backwards with the crotchet; and at the same time pulling upon the body of the child, the head soon passed through the pelvis, completely flattened on the sides. She recovered without a bad symptom. On the 17th of May, 1839, when the same patient had completed the seventh month of her second pregnancy, I punctured the membranes. The liquor amnii began immediately to escape, and continued to flow till the whole of the following day, and in the evening violent labour pains came on. The nates presented, and Mr. Robertson had no difficulty in extracting the child without perforation of the head. On the 19th, the usual symptoms of ruptured uterus soon appeared, and she died on the 22d. On the 24th, I examined the body with Mr. Robertson, and we found a large rent in the cervix uteri. This is the pelvis which you see now, and the following are its dimensions. The distance from the base of the sacrum to the symphysis pubis measures two inches and one line. The transverse diameter of the brim is five inches and three-quarters. At the outlet, a line drawn between the tuberosities of the ischia measures four inches and a half, and another line, from the extremity of the coccyx to the lower edge of the symphysis pubis, three inches and a half. Had premature labour been induced at the end of the fifth month, or earlier, instead of the seventh, it is very probable the fatal accident which occurred would have been prevented.

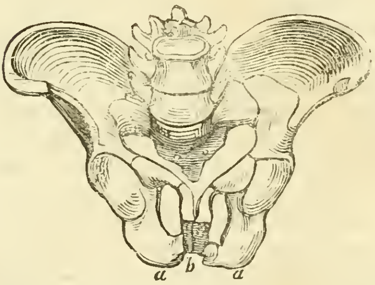
The following figure gives a pretty correct view of the brim of this pelvis, although it was not taken from it.

Fig. 49.



The advantage obtained by inducing premature labour in a first pregnancy, where the pelvis is greatly distorted, was still more striking in the following case: — On Jan. 23, 1842, Mr. Kell, of Bridge Street, Westminster, requested me to see, with him and Dr. Hingeston, a woman, æt. 28, who was in the seventh month of her first pregnancy, and whose pelvis was greatly distorted by rickets. Some days before, Dr. Hingeston had passed a sound into the uterus, and detached the membranes from the lower part, but labour did not take place. I found the os uteri high up, and situated close behind the symphysis pubis. No difficulty was experienced in perforating the membranes in the usual manner, and the liquor amnii afterwards began to escape, and continued to flow till the evening of the 26th, when strong labour pains commenced. At 6 A.M. on the 27th, the os uteri was considerably dilated, and the nates were felt presenting. As it was obvious the breech would never pass through the brim, I brought down the lower extremities with the blunt end of the crotchet, and extracted the trunk without difficulty; but I was obliged also to bring down the arms with the blunt hook. Afterwards I endeavoured to pass up the perforator to the back part of the head, and open it, but could not succeed in getting the point of the instrument beyond the upper cervical vertebræ. Being afraid of separating these, and detaching the head from the trunk, I gave up the attempt to perforate the back part of the head, and tried to draw it through the brim of the pelvis with the crotchet, by fixing the point of the instrument over the bones of the face and forehead. After much exertion, continued for nearly two hours, the head was at last extracted, when completely torn to pieces. I believe it would have been impossible, in this case, to perforate the skull through the roof of the mouth, as has sometimes been done where similar difficulties have presented to perforating the back part of the head. The placenta was soon expelled, and the patient had a perfect and rapid recovery. It is impossible to doubt that the result of this case would have been widely different had the patient been allowed to go on without interference till the end of the ninth month. Being certain that a child of seven months could not pass through the brim of this pelvis, I resolved to induce premature labour at an earlier period, if consulted in her subsequent pregnancy. On February 7, 1843, Mr. Kell again requested me to see this patient, who had completed her fifth month of gestation. The stiletted catheter was passed up readily into the uterus, but the liquor amnii did not escape. On the 10th, the point of the stilette having been sharpened, the instrument was again introduced, and the membranes readily punctured. The liquor amnii continued to flow till the 12th, when pains came on, and the child was expelled in a few hours, without artificial assistance. The head presented. The recovery was favourable. I was formerly of opinion that in no case of distortion, however great, could it be necessary to induce premature labour before the end of the fifth month of pregnancy, but in cases of extreme distortion from malacosteon, where the sacro-pubic diameter does not exceed an inch and a half, as in *this pelvis* which you now see, I think it would be advisable to put a period to the pregnancy before the fifth month, which can be done with perfect safety to the mother. The woman from whom *this distorted pelvis* was removed perished in consequence of the membranes not having been perforated sufficiently early. The following figure represents the appearance of a distorted pelvis in the possession of Mr. Barlow, and of the pelvis you now see.

Fig. 50.



Ritgen has given a table of the period of pregnancy at which labour should be induced, according to the degree of narrowing of the sacro-pubic diameter. Labour, he thinks, should be induced at the twenty-ninth week, when the diameter of the pelvis is two inches and seven lines; in the thirtieth week, when it is two inches and eight lines; in the thirty-first, when it is two inches and nine lines; in the thirty-fifth, when two inches and ten lines; in the thirty-sixth, when two inches and eleven lines; and in the thirty-seventh, when the sacro-pubic diameter is exactly three inches. When it is above three inches, the case must be left to nature.

Mr. Barlow has also published a synoptical table. In a well-formed pelvis, where the distance from the upper edge of the symphysis pubis to the superior part of the os sacrum, or conjugate diameter of the pelvis, is from five to four inches, delivery will take place, he says, by the efforts of nature alone; where the conjugate diameter is from four to three, or two inches and three-quarters, the delivery may be completed by the efforts of nature, or assisted with the forceps or lever; where from two and three-quarters to two and a half inches, premature labour should be induced; where from two and a half to one and a half inches, by embryulcia, or delivery with the crotchet; and where the conjugate diameter of the brim is from one and a half inches to the lowest possible degree of distortion, by the Cæsarean operation.

Mr. Barlow thinks this table will facilitate further inquiry, although he justly observes that the practitioner should bear in mind the absolute impossibility of determining the mean degree of compressibility which the cranium of the fœtus may undergo by the efforts of the uterus; and he very properly points out the necessity of making a very careful examination in each case before adopting any decided plan of treatment.

Baudelocque regarded the induction of premature labour as a useless, if not an injurious, operation; and M. Dugès has recently characterised it as fatal to the mother, and the source of most frightful abuse. In the tables of the Maternité, by Baudelocque, Boivin, and La Chapelle, including nearly 60,000 cases of labour, there is no account of any case in which premature labour was induced. The last of these writers begins her strictures on the practice by declaring that she had never either employed "that method, or seen others have recourse to it." The propriety of inducing premature labour was brought under the consideration of the Academy of Medicine, Paris, in 1827, and they decided that the practice was unjustifiable under any circumstances.

The discordance which exists between Continental and British practitioners is also strikingly displayed respecting the Cæsarean section. The reports of 258 cases of this operation have been collected by Michaelis, 144 of which occurred in the last, and 110 in the present century. Of these cases, 140 proved fatal. Velpeau states that the operation was performed twenty-eight times between 1810 and 1820; and thirty-one times from 1821 to 1830. Dr. Churchill says the operation was performed 316 times between 1750 and 1841, and that the mortality was 52·8 per cent. for the mothers. I believe that it would have been much greater if all the unfortunate cases had been published, which has not been done. In Great Britain the reports of at least 27 cases have been published, and in 25 of them it was fatal to the mother. Other fatal cases have occurred, which have not been recorded. I believe there is no practitioner of reputation now in this country who would recommend the operation upon the living body if delivery could be effected by the perforator and crotchet. Wherever the presenting part can be reached, to apply the perforator and crotchet, an attempt should always be made to deliver, and the Cæsarean operation reserved for those cases in which the distortion is so great that the os uteri and presenting part are entirely beyond our reach.

Most of you have already examined the following table, which has been published in the first of these clinical reports, exhibiting a comparative view of the frequency of forceps and craniotomy cases in some of the principal lying-in hospitals in Europe. It may be useful once more to compare the practice of different institutions, that you may be convinced that the first principles of operative midwifery have not yet been established, at least that they are not generally understood, and that there is no other branch of surgery at the present time in such a rude condition. In one hospital the forceps was employed once in every seven cases, and in another, once only in 728 cases. How important it is that you should watch the progress of protracted and difficult labours, and discover the best method of treatment, and form correct opinions on the use of instruments, it is not necessary for me now to point out to you more particularly.

Hospitals.	Number of Labours.	Forceps Cases.	Proportion.	Craniotomy Cases.	Proportion.
Dublin, Clarke . .	10,199	14	1 in 728	49	1 in 248
— Collins . .	16,654	27	1 in 617	118	1 in 141
Paris, Baudelocque .	17,388	31	1 in 561	6	1 in 2898
— Lachapelle .	22,243	76	1 in 293	12	1 in 1854
— Boivin . . .	20,517	96	1 in 214	16	1 in 1282
Vienna, Boer . . .	9,589	35	1 in 274	13	1 in 737
Heidelberg, Naegele	1,711	55	1 in 31	1	1 in 1711
Berlin, Kluge . . .	1,111	68	1 in 16	6	1 in 185
Dresden, Carus . .	2,549	184	1 in 14	9	1 in 283
Berlin, Siebold . .	2,093	300	1 in 7	1	1 in 2093

Only a few cases have been recorded in which *Exostoses*, or *Osteo-sarcomatous Tumours* of the pelvis, have produced difficult labour, and I have not met with any instance in practice.

Dr. M'Kibbin has related an example in the Edin. Med. and Surg. Journal, April, 1831, where the hollow of the sacrum and right side of the brim of the pelvis were occupied by an exostosis of a conical form. The woman had been in labour fifty hours, and the greatest space afforded for the passage of the child was on the right side, and it was only 1½ or 1¾ of an inch. From the apex of the tumour to the lower part of the symphysis pubis, 1⅛ inch; from the brim of the pelvis on the right side, immediately over the foramen thyroideum to the lateral surface of the tumour at its widest part, 1⅝ inch; more posteriorly, 1½ inch. The delivery was completed by the Cæsarean operation, but the child was dead, and the woman died afterwards, the unsuccessful result being attributed to the delay. Dr. M'Kibbin advocates the early adoption of the Cæsarean operation in all cases where uncertainty prevails as to the practicability of embryulcia, and where, he says, no two practitioners agree as to the actual space in the pelvis. "In short," he says, "where I was not satisfied that a passage existed for a full-grown fœtus of 2 inches in the short diameter, and 3½ in length, I should be inclined to adopt the Cæsarean operation in preference to embryulcia." I would draw an entirely different conclusion, and in all cases, whatever the degree of distortion might be, either in the brim or outlet of the pelvis, attempt to deliver by embryulcia where the presenting part could be reached by the finger, and the crotchet applied. Had the patient survived, and had impregnation again taken place, instead of repeating the Cæsarean operation, as he proposes, premature labour should have been induced in the early months of pregnancy. Dr. M'Kibbin states, in the history of the case, that the patient suffered little or no inconvenience from this morbid growth during life, or the term of utero-gestation. At times she had colicy pains, and, on questioning her mother as to the probable cause of the exostosis, she admitted that her daughter had received a fall on the back when six or eight years of age, which occasioned pain in the sacral region a short time afterwards.

In Dr. Haber's case of difficult labour from an exostosis of the sacrum, the history of which is contained in an inaugural dissertation published at Heidelberg, 1830, the disease also followed a fall upon the ice some years before, when the woman was carrying a heavy load upon the head. This accident was followed by pain in the back and pelvis, which gradually disappeared. She married, became pregnant, and during labour the whole cavity of the pelvis was found to be filled up with an osseous tumour which grew from the sacrum. The Cæsarean section was performed; but the child was putrid, and the patient died soon after the operation. The length of the tumour was seven inches, and its greatest breadth six. The highest part of it hangs, as you will see by looking at *this* figure, over the place where the third vertebra of the loins is joined with the fourth. The lowest part of the tumour is distant about two lines and a half from the point of the sacrum. From the posterior surface of the body of the bones of the pubes the tumour is only one line and a half distant. Towards the anterior part, and downwards between the tumour and bones of the pubes, the space is eight or ten lines. The brim of the pelvis was almost completely filled up with the tumour. It appears from the history that there was no other method of delivering this patient but by the Cæsarean section. If the existence of the disease had been known during pregnancy, which, however, does not appear to have been the case, the induction of premature labour would have been proper in the early months, as soon, indeed, as the pregnancy was detected, which would have obviated the necessity for the operation. The same observation might be applied to the cases of osteo-sarcomatous tumours of the pelvis, obstructing delivery, recorded by Grimmel, Stark, and others.

LECTURE XXVI.

ON PROTRACTED AND DIFFICULT LABOURS FROM ANCHYLOSIS OF THE COCCYX, AND TUMOURS WITHIN THE PELVIS.

ANCHYLOSIS OF THE COCCYX.

This is not a common cause of protracted and difficult labour. No distinct case of tedious labour from this disease has come under my observation. Dr. F. H. Ramsbotham states that he has seen three cases in which the bone broke, or the anchylosed joint gave way, but there is no detailed account given by him of the duration of the labours, or of the manner in which they terminated. Dr. Halsewood, of Darlington, met with a case of severe and protracted labour, in which the forehead of the child rested on the point of the sacrum and coccyx for many hours, and the head was indented by the sharp point of the coccyx, and the skin abraded. The birth was ultimately accomplished by the forceps; as soon, indeed, as the short forceps could be effectually applied. Dr. Halsewood considered the causes of the protracted and severe labour to be smallness of the pelvis and ossification of the os coccygis, much incurvated. When pregnancy again took place, I was requested to state my opinion respecting the propriety of inducing premature labour, but before doing so, and recommending the operation, I thought it advisable to consult Dr. Merriman, whose experience on this subject was communicated to me in the following letter.

My Dear Dr. Lee, — The case you mention to me is doubtless rare, for you have never seen exactly such a one, nor have I. I recollect one patient in whom the point of the coccyx snapped in three subsequent labours, and healed without difficulty; and I have known one or two others where the parts snapped in the first labours, and no ill consequences followed. One of my patients, whose case resembles most that which you refer to, had so great a *turning up*, I believe I must call it, of the coccyx, as to delay the labour for probably two hours, and I was strongly tempted to use the forceps, but they were not applied, and both mother and child did well. I attended her three or four times afterwards, and there was always some delay on account of this straitness, but not so great as at first. There was a considerable bulk of anchylosis; the mischief was produced by a fall down stairs when about 12 or 14 years old.

I agree with you in thinking that it would be right, under all the circumstances of the case, to induce labour at eight months, rather than to leave the poor woman to the chance of again losing her infant, but of course your friend will institute a careful inquiry first, as to the present condition of the parts.

Believe me, dear sir,
Very truly yours,
Samuel Merriman.

34, Brook Streef October 9, 1841.

"I find on examination," observes Dr. Halsewood, in his letter in reply, "that the last bone of the os coccygis is not ossified, but that there is the same projection as before, depending, I now think, more on malformation of the sacrum than merely on the os coccygis. I am no draughtsman, but the line above is an attempt to convey my impression of the curve; in fact, the sacrum curves forwards, so as to form an obvious obstruction, and at the end thereof the last bone of the os coccygis is moveable. My impression was that the latter bone was not moveable, but in this I believe I was mistaken, as the obstacle seems very much the same as before." Premature labour was induced, and the child was born alive without artificial assistance, but has not been reared. Pregnancy again took place, and the propriety of inducing premature labour came again to be considered. The accuracy of Dr. Halsewood's description was fully verified by the most careful examination which I could make of the pelvis, but I was induced, from the extraordinary state of mental anxiety and dread of the operation entertained by the lady, to recommend her to be allowed to go to the full period, and the delivery to be completed with the forceps as soon as it should become evident that the head could not pass without suffering from the pressure of the point of the sacrum and coccyx. The child was born by the natural efforts, and is now alive.

Tumours within the pelvis occasioning difficult parturition are not of very frequent occurrence, but when large, hard, and immoveable, they produce nearly the same consequences as distortion and exostosis of the pelvis, and require, in many respects, a similar mode of treatment. The greater number of these tumours are enlarged ovaria, which have become fixed by adhesions to the uterus and rectum. Some are fibrous tumours developed in the walls of the uterus, and others grow from the ligaments and bones of the pelvis, and are situated in the loose cellular and adipose substance lying between the bones, and the bladder, the vagina, and rectum. These latter form by far the most rare variety of pelvic tumours which obstruct the progress of the child's head during labour, and their diagnosis is extremely difficult and obscure. I shall relate the following examples of these tumours growing from the pelvic ligaments and bones, for the purpose of impressing upon you the necessity of observing the greatest caution in adopting the bold and successful plan of treatment pursued by Dr. Drew and Dr. Burns.

DIFFICULT LABOUR FROM FIBROUS TUMOURS ATTACHED TO THE SACRO-SCIATIC LIGAMENTS AND BONES OF THE PELVIS.

In February, 1803, Dr. Drew examined the body of Mrs. Shaw, æt. 37, the mother of six children, who had died from a tumour within the pelvis, which compressed the bladder and rectum. It was situated in the loose cellular and adipose substance between the viscera and bones of the pelvis, and it grew by a strong root, of a hard gristly nature, from the left sacro-sciatic ligament. Having cut through the root, the tumour came away, like an almond blanched from its skin, so slightly was it attached to the parts that surrounded it. "The tumour was perfectly round, about sixteen inches in circumference, of a fat gristly substance, without any appearance of circulation in it. No artery entering it. No vein proceeding from it. Unconnected with the arteries which run down from the internal iliacs to supply the contents of the pelvis. It seemed the production of the ligament alone. Could not an incision have been made at one side of the perineum and anus," inquires Dr. Drew, "backwards, towards the os coccygis, and the root of the tumour, proceeding from the sacro-sciatic ligament, be come at, and cut through? And as it was so easy to detach it from the contents of the pelvis, might not it have been without much difficulty removed? Should any artery in the neighbourhood of the perineum be cut, it could easily be taken up; and as the tumour itself received no branch from the internal arteries of the pelvis, the hemorrhage, in all probability, would not be great."

Six months after this dissection the following case occurred, which is extraordinary alike for the accuracy of the diagnosis and the facility and success of the formidable operation performed. A tumour, much larger than the fist, was removed through the outlet of the pelvis, and in three days the patient "was able to suckle her child, and the wound perfectly healed."

August 26th, 1803, I was called on, says Dr. Drew, to Mrs. M——, of Lismore. She had been two days in labour before I saw her, and was attended by Dr. Power, Dr. Hannan, and Mr. Pack, Surgeon to the 41st Regiment of Foot. Those gentleman were puzzled at the presentation, and so I should have been, had I not met with the preceding case. It was exactly the same. The tumour grew out of the right side, and occupied the whole cavity of the pelvis so completely as to admit of passing only one finger between it and the pubis, by which I could scarcely reach the head of the child. She said she had for some months laboured under dysuria, so that the catheter had been employed by a surgeon who attended her, and who attributed that affection to her state of pregnancy, supposing it to arise from the pressure of the gravid womb: that she had lately acquired the knack of pressing on the tumour with her finger, which enabled her to make urine without assistance. Being convinced of the nature of the case, I related that of Mrs. Shaw, and represented the possibility of removing the tumour with a prospect of success, at least with more than would attend the Cæsarean section. Embryulcia was out of the question; it could not be performed: there was no room to extract the child: and if it had been practicable, since the mother's life could be prolonged for a short time only, it involved in it a crime; and to leave our patient undelivered was cruel and unprofessional. They therefore willingly consented to the operation proposed. Having laid my patient on a table in the posture of operating for lithotomy, my assisting friends holding each a knee, and the midwife the shoulders, I made my incision by the right side of the perineum and anus, towards the os coccygis, and with the second stroke of the scalpel brought the tumour into view. I passed my finger before and behind its root, which I easily divided with the knife, and introduced my hand, and detached it from the side of the pelvis; withdrew that hand, and introduced the other, by which I separated it with equal facility from the vagina and rectum, and, to their great pleasure and surprise, brought it away. A gush of blood now took place, and I crammed in a sponge, which instantly checked it. An artery near the perineum spouted. This I laid my finger on, and could, if necessary, in any instant have taken it up; but all hemorrhage completely ceased. We now turned our attention towards the support of our patient: assured her all danger was over. No fainting occurred; her pulse was sufficiently distinct and strong. We administered a little wine, but the best of cordials was the great pleasure and satisfaction she saw in the countenances of us all. A labour pain now came on, succeeded by another and another; the head descended into the cavity of the pelvis; the sponge was protruded from the wound. We retained her for an hour on the table, expecting she would soon be delivered, but finding her labour grow tedious we removed her into bed. Here we trusted to the efforts of nature for six hours. Finding the child was presenting with its face towards the os pubis, and apprehensive of her wanting strength, I applied the forceps, and delivered her of a living child, which has since continued well. The placenta came down into the vagina, and was easily removed. No hemorrhage took place. Four stitches were passed through the lips of the wound, and a large sponge was thrust into the valves to keep the sides of the cavity which contained the tumour in contact, and all the other requisite arrangements and comforts were employed. We waited on her in the evening; found her as we could wish; drew off about half a pound of urine with the catheter, for the sponge prevented her from making it herself; left her to repose, and next morning visited her again; she slept well, and complained of little pain from the wound. We drew off her urine, and removed the sponge from the vagina, which I washed out with a syringe, and found it completely free from any injury or ulceration; replaced the sponge, and dressed the wound with a pledget and T bandage.

Aug. 28.— An enema was administered yesterday morning without effect. Some castor oil was given in the evening, which produced rather too many evacuations; but no bad symptom took place. We removed the sponge from the vagina, and found the space which the tumour had occupied completely obliterated. But two of the stitches gave way, and left the lips in part separated. The sponge was omitted, and the lips brought together again with a strip of adhesive plaster. An anodyne was prescribed, to check the catharsis, and two scruples of bark to be taken three times in the day. Here our report ended, as no unfavourable symptom occurred. I visited her for the last time on the 29th, and found her able to suckle her child; both completely well; the wound perfectly healed, without a vestige of any ill consequence from the operation.

Mrs. M. is a slender and delicate woman, aged about 20, and married twelve months; had once before marriage some suppression of urine, but attended with no pain. The tumour measures fourteen inches in circumference, weighs about two pounds eight ounces, and is of the same nature and consistence with that found in Mrs. Shaw. As the above cases are very uncommon — as the operation was attended with unexpected and signal success, and the cure complete — and since many of the profession are inclined to discredit such cases, it may not be amiss to subjoin the testimony of those who were present. I have therefore obtained the signatures of Dr. Power, Dr. Hannan, and Mr. Pack.

In the histories of these very remarkable cases of tumours growing from the sacro-sciatic ligaments, and situated in the cellular and adipose substance between the viscera and the pelvis, there are no symptoms described by which they could be distinguished from ovarian and uterine tumours, the removal of which in this manner no scientific surgeon would recommend. They are related in far too indefinite a manner to warrant us in drawing any conclusion from them, or proceeding to perform this operation where the diagnosis was not more clearly determined. The second case was most successful, marvellously so, it is true, the patient being well in three days; but this is no test of the propriety of the operation, or proof that the case is a safe guide to us in practice. I cannot recommend you under similar circumstances to go and do likewise, as some have advised, but it is proper that your attention should be directed to the possibility of such a case occurring, and the necessity of examining, in all possible ways, if such a case should present itself, so as to establish a diagnosis by which you might be prevented from being misled. I have never seen a tumour growing from the ligaments or bones of the pelvis. I have seen many ovarian and uterine tumours filling up the pelvis, but there is no symptom that

I am aware of by which you can distinguish these from tumours situated between the pelvic bones and viscera.

The only case that I know of similar to the cases of Dr. Drew is the following, in which the tumour was exterior to the uterine organs, though adhering to them.

"In a dreadful case which I met with some years ago," says Dr. Burns, "the attachments were extensive, and the tumour so large as to fill the pelvis, and permit only one finger to be passed between it at the right side of the basin. It adhered from the symphysis pubis round to the sacrum, being attached to the urethra, obturator muscle, and rectum; intimately adhering to the brim of the pelvis, and even overlapping it a little towards the acetabulum. It was hard, somewhat irregular, and scarcely moveable. The patient, Mrs. Broadfoot, was in the ninth month of pregnancy. There was no choice except between the Cæsarean operation and the extirpation of the tumour. The latter was agreed on; and, with the assistance of Messrs Cowper and Russel, I performed it on the 16th of March, a few hours after slight labour pains had come on. An incision was made on the left side of the orifice of the vagina, perineum, and anus, through the skin, cellular substance, and transversalis perinei. The levator ani being freely exposed, the tumour was then touched easily with the finger. A catheter was introduced into the urethra, and the tumour separated from its attachments to that part. It was next separated from the uterus, vagina, and rectum, partly by the scalpel, partly by the finger. I could then grasp it as a child's head, but it was quite fixed to the pelvis. An incision was made into it with a knife as near the pelvis as possible; but from the difficulty of acting safely with that instrument, the scissors, guided with the finger, were employed when I came near the back part; and instead of going quite through, I stopped when near the posterior surface, lest I should wound the rectum, or a large vessel, and completed the operation with a spatula. The tumour was then removed, and its base or attachment to the bones dissected off as closely as possible. Little blood was lost. The pains immediately became strong, and before she was laid down in bed they were pressing. In four hours she was delivered of a still-born child, above the average size. Peritoneal inflammation, with considerable constitutional irritation, succeeded; but by the prompt and active use of the lancet, and purgatives, the danger was soon over, and the recovery went on well. In the month of May the wound was healed. On examining per vaginam, the vagina was felt adhering as it ought to do to the pelvis, rectum, &c. The side of the pelvis was smooth, and a person ignorant of the previous history of the case, or who did not see the external cicatrix, could not have discovered that any operation had been performed. After a lapse of more than fifteen years, she still continues well, but has never been again pregnant."

DIFFICULT LABOUR FROM OVARIAN AND UTERINE TUMOURS.

Baudelocque relates a case of ovarian tumour in the pelvis, obstructing delivery, in which Lauverjat had proposed to perform the Cæsarean operation. Baudelocque turned the child, after forcing up the tumour above the brim of the pelvis, but he was obliged to extract the head with the forceps, after the body and extremity of the child had been delivered. The child was dead, and the woman died two days after. The tumour was ascertained, on dissection, to be an ovarian cyst, filled with long hair and nine well formed teeth. The patient had been in labour sixty hours. If there was space to admit the hand to be passed into the uterus to turn the child, there must have been sufficient space for the employment of the perforator and crotchet. Doeveren had recourse to turning in a similar case, and the mother and child both perished. Dr. Mackenzie turned the child with great difficulty in a case of large ovarian cyst, filling up the hollow of the sacrum, and pressing the os uteri forward to the pubes. The head of the child could not be extracted without long-continued and violent efforts, and the woman died the following day. Dr. Ford relates two cases of difficult labour from pelvic tumours. In the first, as the tumour was large and firm, and did not yield or diminish by the force of the pains, the head was perforated, but the patient died three weeks after. When the body was opened, the tumour was found to be an encysted dropsy of the ovarium, in which there was a considerable quantity of hair. In the latter case, which in all its circumstances resembled the former, a trocar was passed through the posterior part of the vagina directly into the tumour. A large quantity of water was immediately discharged, the tumour subsided, and a living child was born without any farther assistance. This patient recovered from the lying-in, but some time after becoming hectic, she died at the end of about six months; though from the symptoms it did not appear that the fever was occasioned either by the disease or the operation. This patient was not examined after death. "Having related these two cases," observes Dr. Denman (1795), "I have said all which I had to advance on the subject, except that I have met with more than one instance of a circumscribed tumour on one side of the pelvis, which I at first suspected to be a diseased ovarium. But as these tumours have always given way to the pressure of the head of the child, the passage of which they have only retarded for a short time, I have concluded they were formed either by some soft fatty substance collecting there, or were cysts containing lymph casually effused, and forming to itself a cyst from the cellular membrane. But on making an examination after delivery, the tumours were found to have again acquired their primitive form and size."

Few, if any, additional facts of importance respecting tumours within the pelvis, occasioning difficult parturition, were published from 1795 to 1811, when Mr. Park's paper on the subject appeared in the 2d vol. of the Medico-Chirurgical Transactions, in which he has related clearly and precisely the following histories.

In his first case the patient had been long in labour, but the head could not enter the pelvis, owing to a firm globular tumour situated between the vagina and rectum, which left very little space between this and the pubes. The head of the child was opened, and extracted with much difficulty. After delivery the tumour totally disappeared; the patient had more children afterwards without recurrence of the tumour. Mr. Park thought that an attempt should have been made to diminish the bulk of the tumour, before having recourse to the crotchet. In his second case he found the pelvis nearly filled by a tumour similar in situation and texture to that in the former case. It was with some difficulty that the finger could be passed between the tumour and pubis, so as to reach the os internum, till it became a good deal dilated. After a severe and protracted struggle, the delivery was accomplished by the natural efforts, and the child was born alive. After this she had four miscarriages and premature births in succession, each time of twins, from the fourth to the end of the seventh month. The seven months children were the last of the four; and these were likewise born without any forcible measures. During these pregnancies, the tumour, by its pressure on the urethra, frequently occasioned retention of urine, so as to require the use of the catheter, although by the touch little change could be discovered in its bulk. In her next pregnancy she went to her full time, of a single child, and after she had been long in labour the head pressed constantly on the upper part of the tumour, without being able to descend into the pelvis. The lancette cachée was conducted along the finger to a part of the tumour which felt thinner than the rest, and three or four scratches were made, till the parietes felt thin, and the instrument was then forced into a large cavity, which was filled with a bloody sanious fluid, with a number of flakes of membranous substances, resembling the strippings of tripe: some of these were as large as a quarter of a sheet of common paper. The tumour was completely evacuated by the next pain, and in two or three more the child was expelled. The recovery was slow after this delivery; a very considerable offensive discharge ensued from the incision, with pains in the loins, debility, and symptomatic fever. In two months the symptoms disappeared, but the healing of the tumour, and consolidation of its cavity, occasioned a considerable stricture, so that the next labours were also difficult.

In the next case related by Mr. Park there was a considerable tumour, like those already described, filling up a considerable part of the pelvis, but of a less firm texture, and not so globular, being of a more irregular oblong figure. The woman had been in labour two days; her strength was not much exhausted, and the head pressed more into the pelvis than in either of the former cases. It was determined to leave the case to nature for a time, and perforate the head, if requisite. The child was expelled by the natural efforts on the following day, but she died three days afterwards, with vomiting and constipation. The nature of the tumour was not ascertained. In the fourth case a tumour filled the pelvis, and kept the head of the child above the brim, after the labour had continued long, and exhaustion had taken place. An incision was made into the tumour, but no cavity discovered. Nothing but blood was discharged. The head of the child was opened, and the patient recovered without much difficulty. In the last case an ovarian cyst filled the pelvis so completely that the os uteri could not be reached. In the evening, after slight pains had continued all day, it was reached with some difficulty above the symphysis pubis, and the head was felt presenting. The night passed over with little alteration, and the whole of the next day without much more. Strong pains then came on, and continued the whole of the following night, which dilated the os uteri to the diameter of three inches. An opening was made into the tumour after the labour had continued some time longer, and a bloody serum drained off, so as to render the tumour quite flaccid, and to diminish its bulk at least two-thirds. As the head descended into the pelvis it became totally evacuated. Immediately after the puncture was made the head began to dip into the pelvis, and to dilate the os internum more fully; but the child proving a large one, it required eight hours more of strong labour to complete the delivery, although the tumour could not oppose any further resistance. The long pressure on the head destroyed the child, but the patient recovered.

Mr. Park has given no opinion respecting the origin and nature of these tumours, most of which were probably ovarian. The practice adopted by him was certainly extremely judicious; but it did not differ from that which Dr. Ford had recourse to in his cases. In the pathology and treatment of these tumours, therefore, there is nothing absolutely new in Mr. Park's paper; but its publication was of use by directing the attention of practitioners to the subject.

In the third volume of the Medico-Chirurgical Transactions, Dr. Merriman (1812), has related a case of difficult parturition occasioned by an ovarian cyst in the pelvis, which occurred in 1804. After thirty-six hours had passed in severe and ineffectual pain, the head was perforated, and extracted with much difficulty. Soon after this child was born it was ascertained that there was another in the uterus, which, being smaller, was expelled by the natural efforts, and appeared to have been dead some hours. The patient died in a few days from peritoneal inflammation, and the right ovarium about the size of a trap-ball, and in a state of high inflammation, was found lying between the rectum and the vagina. The brim of the pelvis was narrow. Dr. Merriman also relates a case which had occurred a short time before in one of the London Lying-in Hospitals, in which the labour was protracted by an ovarian tumour in the pelvis, consisting, like Baudelocque's, of fatty matter, intermixed with hair and teeth. The head of the child was perforated, and the woman was delivered, but did not long survive. "Upon the whole, therefore," he says, after alluding to all these cases, "I am disposed to believe that, where the tumour in the vagina occupies a large space, it would be a more warrantable practice to remove it by excision, if it consisted of solid substance, and certainly to puncture it if it contained a fluid, rather than to expose the child to certain death, and the mother to great hazard, by the use of the perforator." Dr. Drew's cases are quoted, to sanction, in some degree, the attempt to remove solid ovarian tumours by excision during labour; although, as has been already stated, it was not an ovarian tumour which Dr. Drew removed through the outlet of the pelvis.

Other five cases, of a nature similar to the preceding, have been recorded by Dr. Merriman, in the tenth volume of the same work. In the first, the delivery was accomplished with the greatest difficulty, after the head of the child had been opened. The tumour, which was large and elastic, occupied the back part and left side of the pelvis, which was distorted; and it was not opened, Dr. Denman and Mr. Croft not being satisfied that it contained a fluid. The patient ultimately recovered, after remaining long in extreme danger. The labour lasted ninety hours. In the second case, there was a tense, elastic, lobulated tumour, between the vagina and rectum, which was punctured with a trocar from the rectum; but the matter it contained was of the consistence of honey, and would not flow through the trocar. The patient was left twenty-four hours in labour. After this, when the tumour was somewhat diminished in volume, but the head of the child was not at all advanced, the head was perforated, and eight hours after it was extracted. The tumour had ceased to be felt before this. Eighteen months after, she died hectic. The effects of chronic inflammation were apparent in the abdomen; and the ovarium, which was in its natural situation, equalled a small lemon in size, and contained sebaceous matter, and a tooth lying loose among it. The tumour in the third case was neither so large nor incompressible as in the other instances. As the head of the child was forced down at each pain, the tumour yielded or became flattened against the back of the pelvis. The hand was passed into the vagina, and the tumour pushed up above the brim; and thus room was procured for the head to pass, which in less than an hour was protruded through the os externum. The child was alive and healthy. The right shoulder presented in the fourth case, the history of which was communicated by Mr. Hardwick, of Epsom, and the tumour was not connected with the ovaria. It was situated between the cervix uteri and the rectum, forming a cushion in the hollow of the sacrum, the superior portion rising an inch or more above the extremity of the bone. Its shape was elliptical, flattened at the anterior and posterior surfaces by the pressure it had sustained; its size was that of a large orange, or the head of a fœtus at six months. It was contained in a cyst, apparently formed of the peritoneal reflection at its superior part, and of the cellular membrane connecting the rectum and vagina. The ovaria were of their proper size, and in their natural situation. The anterior part of the rectum was inseparably connected to the tumour. The whole mass was soft and compressible; and, although the cyst was in most parts very thin, it had not given way by the force employed in the delivery. The contents of the tumour were regularly disposed in layers, the concave surface of one portion being exactly adapted to the convex surface of the next, and the diameter of each about the size of a sixpence. Their colour resembled tallow, and they appeared to consist of adipocerous matter. The woman was left long in labour before the operation of turning was performed. The crotchet and blunt hook were employed before the head could be extracted. Alarming symptoms took place immediately after delivery, and she died in less than half an hour, before the placenta could be extracted. She was 44 years of age, and had been delivered of six children. In her first and sixth labours the forceps were used; but no tumour existed at the time of her former labour; at least none that could be detected. The fifth case also terminated fatally. After labour had continued a great many hours, a small-sized curved trocar was passed up the rectum, and pushed into the tumour, and about six ounces of a pale yellow fluid escaped. The size of the tumour was diminished so much that it was expected the child would pass by the natural efforts; but on the following day it was found necessary to deliver by opening the head. She died in a few days, with the usual symptoms of uterine inflammation. The right ovarium was found imbedded between the vagina and the rectum: it was about the size of a sheep's bladder, and contained fatty matter, a large quantity of hair, and the rudiments of two or three teeth.

That labour was allowed to go on too long in most of these cases there can be little doubt. In cases where the tumour is large, Dr. Merriman infers, from the results, that the perforator alone cannot be trusted to, and that experience does not warrant the practice of turning, and delivering by the feet. "Upon the whole," he thinks, "the evidence we at present possess is most in favour of opening the tumours; for of the nine women who recovered more or less perfectly, five appear to owe their safety to this operation; and of the three children born alive, or supposed to be so, two were preserved by the same means."

Nothing is said by Mr. Park, or Dr. Merriman, in the fourth edition of his work on Difficult Parturition (1826), respecting the propriety of inducing premature labour, where it is known during pregnancy that a tumour occupies the cavity of the pelvis, and is fixed within it. As early as 1815, it appears, however, from the history of the following case (No. 60), that this subject had been fully considered by Ramsbotham, senior; and that the operation was sanctioned by other two professional accoucheurs, and would have been performed if it had been possible to reach the os uteri.

"In April, 1815, I was bespoke to attend a lady near the Mansion House, and upon calling upon her I learnt that some years ago she had passed a living child without difficulty; that about two years before, she had a bad labour, in which, after its continuing for several days, the child was destroyed, and obliged to be extracted by force, and that she narrowly escaped with her life. Having now advanced beyond the fifth month of pregnancy, she suffered much uneasiness in her mind for the result of her ensuing accouchement, and wished to place herself under my care. She was tall in person, and apparently well formed; but it was evident that some malformation, or disease, had taken place in the pelvis, between the two preceding lyings-in: I was therefore anxious to ascertain whether the same obstacle to the passage of the child still existed. An examination being allowed, I found a large tumour of considerable solidity, but of what description I am still ignorant, filling up nearly the whole cavity of the pelvis, so as scarcely to admit the free passage of two fingers to the brim. This information placed me upon the alert, and gave me some idea of the difficulties I should in future have to contend with. I extended my inquiries to the nature of the preceding labour, the degree of difficulty attending it; and the danger following it; and having made myself acquainted with these facts, as far as I was able, *I proposed the induction of premature labour, as the most likely means of diminishing the patient's sufferings.* The proposition was readily acceded to. I was now desirous of a consultation, as well for a sanction to the proceeding, as for determining the most proper time to put it in practice. Two celebrated professional accoucheurs met me in consultation with Mr. ——, who had been present at the preceding difficult labour. After all the inquiries we severally could make, the induction of premature labour appeared to all to be impossible, inasmuch as the tumour so far prevented the introduction of the hand that the finger could not be carried sufficiently high to reach the os uteri. In this dilemma we had no alternative but to let the woman go her full time, and take her chance. Her labour commenced on the fore part of Tuesday, June 25th, and went on slowly till evening, when the pains began to quicken. About midnight I was called, and found the os uteri dilated, the liquor amnii discharged, the pains very active, the head at the brim of the pelvis, and scarcely sufficient room to admit two fingers through the pelvis. I sent to Mr.——, who had been requested to be again present, but he was not at home. The pains rapidly increasing in power, I determined immediately upon perforating the head, with the then intention, after evacuating the brain, of leaving it a few hours for collapse, before I extracted it; but this intention I did not pursue. After the perforation was made, the labour pains soon became expulsive. I was now desirous of taking advantage of their powerful efforts to assist me in the extraction of the head; I therefore introduced the crotchet, and getting a good purchase, the vagina at the same time somewhat relaxing, I got down the head by little and little, till I at length extracted it, quite crushed together. The operation took up more than four hours of very great exertion on my part. The body of the child soon followed, and the placenta was naturally excluded. The tumour was still in its original situation, but the vagina felt flaccid and loose. I was apprehensive that subsequent mischief might ensue from the pressure of the head, and the degree of violent force I was obliged to exert in the extraction of the head; but none, to my knowledge, followed. Febrile symptoms, which took place, gradually declined, and she completely recovered.

Dr. Ramsbotham has related the history of another case, No. 61, which occurred in 1818, in which he proposed to induce premature labour in the eighth month of pregnancy, but the patient would not consent to the operation. The first volume of Guy's Hospital Reports, published in 1836, contains a paper by Dr. Ashwell, entitled Observations on the Propriety of inducing Premature Labour in Pregnancy complicated with Tumour, in which he strongly recommends, to obviate the morbid changes in fibrous tumours resulting from pregnancy, the same operation as proposed by Dr. Ramsbotham; but in none of the six cases related in the communication was premature labour induced. In the second volume of the same work there is a case recorded by Dr. Ashwell, of cancer of the external parts, with pregnancy, in which the membranes were punctured; but the woman died soon after delivery. The seventh volume of the same work contains Observations by Dr. Lever, on Pelvic Tumours obstructing Parturition, with cases; but in none of the cases I believe was the operation actually performed: so that our experience upon this point is still extremely limited.

The following cases of pregnancy and difficult labour, from ovarian and uterine tumours, have come under my observation; and it will be seen that, in one of them, the induction of premature labour did not prevent fatal inflammation and suppuration of the tumour.

In the summer of 1839, I saw a patient, some miles from London, whose labour was protracted by a tumour within the pelvis, probably ovarian. She had been delivered before repeatedly, and all her labours had been natural. After she became pregnant on this occasion, she thought, from feeling two distinct swellings in the abdomen, that she had twins. When I first saw her, she had been in labour nearly twenty-four hours. The head had scarcely begun to enter the brim of the pelvis, the cavity of which was occupied by a tumour the size of a cricket-ball, or larger. Whenever a pain came on, the tumour was pressed down before the head. The forceps had been applied, but the head could not be brought before the tumour, though great and long-continued efforts had been made to drag it forward. I opened the head, and had much difficulty afterwards in drawing it down with the crotchet. In 1841, the same person being in the seventh month of pregnancy, Mr. Pickering, of Hammersmith, requested me to make an internal examination, to determine the propriety of inducing premature labour. As the tumour had risen out of the pelvis, had not enlarged, and the brim was occupied with the lower part of the uterus, I thought it best not to interfere. She went to the full period, and was safely delivered of a living child. In another case of very protracted labour, where the hollow of the sacrum was filled up with a large ovarian cyst, I delivered by craniotomy, and the patient recovered favourably.

A woman, æt. 30, in the fifth month of her first pregnancy, began to suffer from sickness, fever, and constaint pain and distension of the abdomen. On examination, it was easily perceived that the gravid uterus was pressed to the left side by a hard, painful, lobulated tumour on the right. This continued rapidly to enlarge, and to become more exquisitely painful, though leeches were applied in great numbers over the tumour, and calomel, antimony, opium, and cathartics, were administered internally. The painful distension of the abdomen soon became so great that it was necessary to obtain relief by inducing premature labour. This was easily done. For a short time after delivery the symptoms were less severe, but the fever, sickness, and painful distension soon returned, and proved fatal. A fibrous tumour, in a state of inflammation and suppuration, was found attached by a large root to the right side of the body of the uterus. The peritoneum which covered it adhered to the parietes of the abdomen, omentum, intestines, and liver. Numerous small fibrous tumours, the bloodvessels of which have been injected, were found imbedded in other parts of the parietes of the uterus. These were in a healthy state. I was called to this case by Mr. Walker, of Marylebone Street, and it occurred in the summer of 1840.

On the 6th December, 1840, Dr. Brown requested me to see a case of pregnancy complicated with an ovarian tumour. This tumour had appeared five years before conception took place, and had slowly enlarged. The patient was in the sixth month of her first gestation, and the abdomen was enormously distended, and a fluctuation was perceived on percussion. The difficulty of breathing was so urgent that it was impossible for her to remain an instant in the horizontal position. We considered it necessary to induce premature labour; but the os uteri was so high up, and directed so much backwards, that great difficulty was experienced in passing the stiletted catheter into the uterus, to perforate the membranes. The anterior lip of the os uteri could only be reached with the tip of the finger. An instrument with a sharper point, and a smaller curve than that employed could not have been introduced in this case to evacuate the liquor amnii. On the 7th, labour pains commenced. Venesection and opiates were employed to promote the dilatation of the os uteri. The nates presented, and on the ninth a dead fœtus was expelled. The relief from the delivery was great, though the abdomen continued large, and the fluctuation distinct, for several weeks. August 10th, 1841. The ovarian tumour has been considerably reduced in size since the repeated application of leeches, and the long-continued use of the liquor potassæ. The general health is nearly in the same condition as before pregnancy. She has again been pregnant, gone to the full period, and been delivered without any artificial assistance. Inflammation of the tumour followed, but recovery has taken place. — Twelve years ago, with Dr. Merriman and Dr. John Prout, I examined the body of a woman, æt. 40, who had died from malignant disease of the right ovarium a few days after delivery. In the fourth month she began to suffer from uneasiness in the hypogastrium, and irritability of the stomach. The countenance became sallow, and the constitutional powers greatly reduced. The abdomen not long after began rapidly to enlarge, and before the end of the seventh month it had attained the size it usually acquires at the full period. An enormous cyst, which contained a dark-coloured, gelatinous fluid, was found on dissection adhering to the right ovarium, and within this cyst were a number of others of different sizes and shades of colour, which, when cut open, presented the true encephaloid or hæmatoid fungous character.

I have very little to say respecting protracted labour from *cicatrices of the vagina* and *cancer of the os uteri*. Where it arises from the first of these causes, the pressure of the head of the child is generally sufficient to overcome the resistance, if the uterine contractions are strong. It is proper in all cases to wait, and see what the natural efforts can do, before interfering. In one case, where, from the great extent and hardness of the cicatrix, it seemed impossible for the dilatation to be effected without assistance, the most striking effect was produced by a copious venesection. In another case the edge of the cicatrix was slightly cut with a scalpel. In a third, where complete exhaustion had taken place, I extracted the child alive with the forceps; but the cicatrix was extensively lacerated. To prevent women who have cancer of the os uteri from dying undelivered, if allowed to go to the full period of pregnancy, it would be justifiable to induce premature labour even before the end of the seventh month.

LECTURE XXVII.

ON THE INVENTION AND USE OF THE FORCEPS IN PROTRACTED AND DIFFICULT LABOURS.

On the 19th August, 1670, I saw, says Mauriceau, a little woman, æt. 38, who had been eight days in labour with her first child, the liquor amnii having escaped on the first, with very slight dilatation of the uterus. Having remained in this state to the fourth day, I was called to deliver my opinion upon the case to the midwife, whom I advised to have the patient bled, and in the event of the bleeding failing to produce any good effect, to give two drachms of infusion of senna to excite uterine contractions, which was done the following day; when the uterus dilated as much as was possible. Nevertheless the head could not pass, in consequence of the great distortion of the pelvis, and I was again called three days after, but finding, from the narrowness of the passage, that it was impossible to guide the crotchet to the head with safety, I declared to all the assistants that the delivery could not be effected, of which they being fully persuaded, urged me to draw the child from the belly by the Cæsarean operation, which I would not undertake, knowing well that it is always very certainly mortal to the mother. But after I had left this woman without being able to afford her relief, there arrived unexpectedly an English physician, named Chamberlen, who was then at Paris, and who, from father to son, practised midwifery in London, where he has since acquired the highest degree of reputation in this art. This physician, seeing the woman in the condition I have described, expressed his astonishment that I, whom he pronounced and affirmed to be the most dexterous accoucheur in Paris, could not deliver her, and promised that he would certainly do so in less than the half of a quarter of an hour, whatever difficulty he might encounter. He accordingly went to work, and laboured upwards of three hours without stopping to take breath, and then being thoroughly exhausted, and seeing the poor woman almost dead, he was compelled to abandon the case, and avow that the delivery could not be effected, as I had declared. The woman died undelivered twenty-four hours after, and I found, on opening the body, which I did by performing the Cæsarean operation after death, that the whole uterus was torn and pierced in several places by the instruments which this physician had employed blindly, without the direction of the hand, which, being one half larger than my hand, could not be introduced. Nevertheless this physician had come to Paris six months before, in the hope of making his fortune, having raised a report that he had a secret peculiarly applicable to labours of this kind, boasting that he could with it complete the most hopeless and desperate cases. He had even offered to communicate his pretended secret to M——, the first physician of the king, for 10,000 crowns. But the result of this unfortunate labour disgusted him so much with France, that he returned to England in a few days, seeing clearly that there were men in Paris far more skilful in the art of midwifery than he. But before setting off for London he paid me a visit to compliment me on my book, which I had published two years before, to inform me that he had never previously seen so difficult an operation as the delivery of this woman, and to praise me because I had refused to undertake it as inconsiderately as he had done. I received his congratulations as I ought, giving him to understand that he was thoroughly deceived in believing that it was as easy to deliver women in Paris as he had found it in London, to which he returned the following day, carrying with him a copy of my book, a translation of which into English he published in 1672. Since this translation appeared, he has acquired so high a reputation in the art of midwifery in London, "qu'il y a gagné plus de trente mille livres de rente, qu'il posséde présentement, à ce que m'ont dit depuis peu de personnes de sa connoissance."

Dr. Hugh Chamberlen, in his preface to the translation which he published of Mauriceau's work in 1672, and which is entitled "The Diseases of Women with Child and in Child-bed, as also the best means of helping them in Natural and Unnatural Labours, with fit Remedies for the several Indispositions of New-born Babes," &c., gives the following account of his important secret, and explanation of the reason why it was not divulged, as he obviously felt ought to have been done. "In the 17th chapter of the second book, my author justifies the fastening hooks in the head of a child that comes right, and yet, because of some difficulty or disproportion, cannot pass; which I confess has been, and is yet, the practice of the most expert artists in midwifery, not only in England, but throughout Europe, and has much caused the report, that where a man comes, one or both must necessarily die; and is the reason of forbearing to send till the child is dead, or the mother dying. But I can neither approve of that practice nor those delays, because my father, brothers, and myself (though none else in Europe as I know), have by God's blessing, and our industry, attained to, and long practised, a way to deliver women in this case, without any prejudice to them or their infants, though all others (being obliged, for want of such an expedient, to use the common way) do, and must endanger, if not destroy, one or both with hooks. By this manual operation a labour may be despatched (on the least difficulty) with fewer pains, and sooner, to the great advantage, and without danger, both of woman and child. If, therefore, the use of hooks by physicians and chirurgeons be condemned (without thereto necessitated by some monstrous birth), we can much less approve of a midwife's using them, as some here in England boast they do; which rash presumption, in France, would call them in question for their lives. In the fifteenth chapter of this book my author proposes the conveying sharp instruments into the womb, to extract the head, which is a dangerous operation, and may be much better done by our fore-mentioned art, as also the inconvenience and hazard of a child dying thereby prevented, which he supposes in the twenty-seventh chapter of this second book. I will now take leave to offer an apology for not publishing the secret I mention we have, to extract children without hooks where other artists use them; viz., there being my father and two brothers living that practise this art, I cannot esteem it my own to dispose of nor publish it without injury to them; and think I have not been unserviceable to my own country, although

I do but inform them that the fore-mentioned three persons of our family and myself can serve them, in these extremities, with greater safety than others.''

The secret which the Chamberlens possessed was the midwifery forceps which they had invented and perfected — it has undergone no essential improvement since; and the glory of the discovery both of the forceps and vectis, notwithstanding the sordid avarice with which they were so deeply tainted, and the utter disregard to the claims of humanity which they manifested by their mysterious conduct in concealing their instruments after the acquisition of the wealth which they so eagerly coveted, must in justice be awarded to them in all future ages. A variety of forceps had been invented long before the time of the Chamberlens, but they were unquestionably the first who discovered the true principle upon which the instrument can be employed with advantage — the separate introduction and subsequent locking of the blades. But except this short notice, contained in the preface to the translation of Mauriceau's work, from which nothing can be learnt respecting the construction of the forceps, the method of applying it, and the cases of labour in which it could be used with advantage, no further account was ever given by them of their secret; and the Chamberlens, father and sons, and grandsons, Hugh, Peter, and Paul, had all died, and the whole family, I believe, had become extinct (about a century and a half had passed away) before it was known with absolute certainty what instrument it was they had invented. The extraordinary manner in which this became known in 1818 has been described by Mr. Carwardine, in a short paper published in the ninth volume of the Medico-Chirurgical Transactions, which I shall read to you.

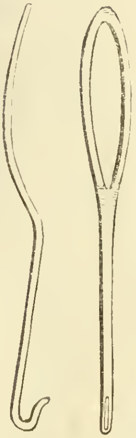
"In depositing the obstetric instruments of the Chamberlens,'' says Mr. Carwardine, "among the archives of the Medico-Chirurgical Society, I beg leave to offer a few facts and observations which may serve to authenticate their genuineness and their originality. The estate of Woodham, Mortimer Hall, near Maldon in Essex, was purchased by Dr. Peter Chamberlen some time previous to 1683, and continued in his family till about 1715, when it was sold by Hope Chamberlen to Mr. William Alexander, wine-merchant, who bequeathed it to the Wine-Coopers' Company. The principal entrance to the mansion is through a porch, the masonry of which, being carried up with the building, serves as closets to its respective stories. Two or three years ago, a lady with whom I am intimately acquainted, and from whom I had the particulars, discovered in the floor of the upper closet a hinge, and tracing the line she saw another, which led to the obvious conclusion of a door; this door she soon found means to open. There was a considerable space between the floor and the ceiling below, and this space contained divers empty boxes, &c. Among those was a curious chest or cabinet, in which was deposited a collection of old coins, trinkets, gloves, fans, spectacles, &c., with many letters from Dr. Chamberlen to different members of his family, and also these obstetric instruments. Being on terms of intimacy with the family resident at Woodham, Mortimer Hall, these instruments have been presented to me, and I have now the satisfaction of depositing them with your society, for the the gratification of public curiosity, and to secure to Chamberlen the meed of posthumous fame due to him for his most useful discovery. With respect to these instruments, I would briefly observe that they appear to me to contain *within themselves* the most direct and conclusive evidence of originality of invention; and that even the progress of this invention may be distinctly traced in its different stages as it passed through the mind of the inventor. First, we have a simple vectis, with an open fenestrum (supposed to be of much more recent invention); then we have the idea of *uniting two* of these instruments by a joint, which makes each blade serve as a fulcrum to the other, instead of making a fulcrum of the soft parts of the mother, and which also unites a power of drawing the head forward. This idea is at first accomplished by a pivot, which, being riveted, makes the instrument totally incapable of application. Then he goes to work again, and having made a hitch in each vectis for the joint, he fixes a pivot in *one* only, which, projecting, is to be received into a corresponding female screw in the hole which is to receive it. Every practical accoucheur will know that it is not easy, or always possible, to lock the joint of the forceps with such accuracy as to bring this pivot and hole into apposite contact. This Chamberlen soon discovered, and next produced a more light and manageable instrument, which, instead of uniting by a pivot, he passes a tape through the two holes, and winds it round the joint, which method combines sufficient accuracy of contact, security, and mobility. From the roughness of the workmanship, I am led to conclude that Chamberlen was his own artificer: a practice, I am told, not uncommon in those days, when mystery and empiricism were not regarded as contemptible even among the enlightened professors of science."

When secretary of the Medical and Chirurgical Society, ten years ago, I obtained permission from the council to have models made of all these instruments described by Mr. Carwardine, the originals of which are still preserved. These models are now before you upon the table, and if you examine them you will come to the same conclusion as he did, that they contain within themselves the most direct and satisfactory evidence of originality of invention, and that even the progress of the invention may be traced in its different stages from the vectis to the forceps as it passed through the mind of the inventor.

The two figures which follow represent a front and side view of one of the levers or vectes found among the Chamberlen instruments.

The other vectis in the collection has the extremity of the handle blunt.

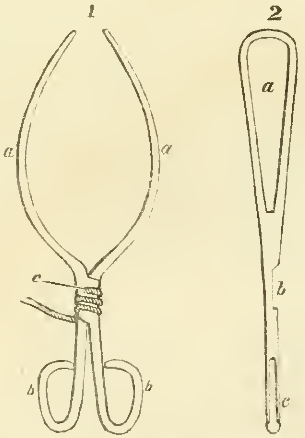
Fig. 51.*



If you compare the two first figures which follow, and which represent the most perfect Chamberlen forceps, with the other two figures, which represent the straight forceps of Denman, now in common use, you will perceive that they are essentially the same instruments. The wooden handles and lock of Denman's forceps were invented by Smellie, and this is the only difference which exists, and it is not an important one, between the Chamberlen forceps, and the short straight forceps of Smellie and Denman. The length and form of the blades, and the openings in them called fenestræ, are as nearly as possible the same, and undoubtedly had the same origin. It is evident from the form and construction of these forceps, and those of Chapman and Giffard, that an imperfect knowledge of the instrument employed by the Chamberlens had been obtained before 1733, by some means at present wholly unknown. I wish some evidence could be furnished to prove that this information was communicated by the authors of the discovery.

It has been stated, in several of the historical accounts which have been published of the forceps, that about sixteen years after the occurrence of the case at Paris, related by Mauriceau, Dr. Hugh Chamberlen was compelled to take refuge in Holland, in consequence of espousing the cause of James II. While in Holland, he sold the lever to Roonhuysen as the secret which he possessed, but there is no evidence to prove, as Alphonse Le Roy asserts, that he parted with the forceps. The vectis was afterwards sold to two Dutch accoucheurs, Bekelman and Ruysch, who afterwards, according to Osiander, made a disgraceful trade with it. It would appear from the history of their proceedings, that they not only frequently employed it for the sake of obtaining the sum which was usually paid to them for their assistance, but that they sold to others, over and over again, the same secret at an enormous price. Sometimes, too, they bargained for the half of what might be gained

Fig. 52.†



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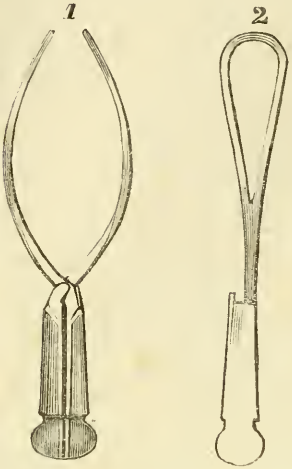
* Chamberlen's lever — the front and side views. The only difference between this and the other specimen found consists in the one being blunt at the extremity of the curved handle, while this terminates in a sharp point.

† This cut is taken from a drawing of the most perfect of Chamberlen's instru-

by the use of the instrument, and in the end it appears that they gave to every individual a new instrument as the true one, with the view, if any one should be inclined to betray the secret, the public might always remain in doubt which was the genuine instrument. None of the Dutch accoucheurs were so patriotic, or possessed so much humanity, as to disclose the secret of the Chamberlens. The immense gains, however, which the possessors of this secret made, rendered men of science most anxious to find out their secret. With this view Palfyn, of Ghent, made several journeys to Amsterdam and London for the purpose of finding out some clue to the discovery of the Chamberlens. After he had collected as much information at both these places as he was able, he had an instrument made, which consisted of two steel blades like spoons, which were to be placed over the head of the child situated in the pelvis, by which, with the assistance of two iron handles, it might be drawn out. Palfyn went to Paris in 1723, fifty-one years after the translation of Mauriceau was published, and showed this instrument to the members of the Royal Academy of Sciences as his own discovery. If you look at this representation of Palfyn's instrument in Mulder's plates, you will see that he had not obtained accurate information respecting either the lever or forceps of the Chamberlens. It consists of two blades without a lock, and altogether very unlike the Chamberlen forceps, and obviously useless in practice. Palfyn's instrument underwent several changes before it acquired that form which it possessed when it received the name of Dusé's forceps, an account of which was first published by Butter, in the Edinburgh Medical Essays and Observations, in 1733.

Fig. 53.*



" The forceps," says Butter, " for taking hold of a child's head when it is fallen so far down among the bones of the pelvis that it cannot be pushed back again into the uterus, to be extracted by the feet, and when it seems to make no advances to the birth by

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ments. No. 1 is the forceps locked : *a*, the blades ; *b*, the handles ; *c*, the hole in the joint, through which is passed the string to connect the blades. No. 2, the front view of a single blade : *a*, the fenestra ; *b*, the groove in the shank, forming the lock, by which the two blades, perfectly similar in form, are adapted to each other ; *c*, the handle.

The following are the dimensions: — extreme length, $11\frac{1}{2}$ inches; length of blade, $7\frac{1}{4}$ inches; of handle, $4\frac{1}{4}$ inches; greatest width between the blades, $3\frac{3}{8}$ inches; width between the blades at the points, $\frac{3}{4}$ of an inch ; greatest width of the blade, $1\frac{1}{2}$ inch.

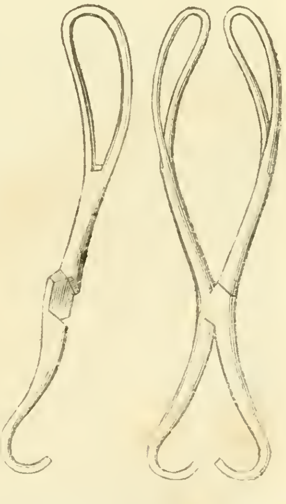
* No. 1, Denman's forceps closed ; No. 2, a single blade.

the throes of the mother, is scarce known in this country, though Mr. Chapman tells us it was long made use of by Dr. Chamberlen, who kept the form of it a secret, as Mr. Chapman also does. I believe, therefore, that a sight of such an instrument, which I had from M. Dusé, who practises midwifery at Paris, and who believes it to be his own invention, would not be unacceptable to you, and the publication of a picture of it may be of use to some of your readers." This figure represents this instrument of Dusé, but you see it is very widely different from the Chamberlen forceps. The handle and lock bear some resemblance to it, but the blades of Dusé's forceps are merely two deeply concave steel plates, like spoons, without fenestræ. This was I believe, however, the nearest approach to perfection in the construction of the forceps which was made on the Continent before the representation of the English midwifery forceps were given by Giffard and Chapman in 1734 and 1735. The first edition of Chapman's Treatise on the Improvement of Midwifery, which contained a description, but no representation of the forceps, appeared in 1733, or earlier; and in 1734, Giffard's Cases in Midwifery were published, with the figure, now before you, of what is usually called Giffard's extractor, which, you see, is the same instrument as that delineated by Chapman in the second edition of his Treatise published in 1735. Giffard does not lay claim to the invention of the forceps, nor is there any account of the manner in which he came to the knowledge of it; there is no intimation by him that the instrument was kept secret, and he speaks of it as well known. Chapman says, "the secret mentioned by Dr. Chamberlen, by which his father, two brothers, and himself, saved such children as presented with the head, but could not be born by natural pains, was, as is generally believed, if not past all dispute, the use of the forceps, now well known to all the principal men of the profession, both in town and country." "As to forceps," he adds, "which I think no person has yet any more than barely mentioned, it is a noble instrument, to which many now living owe their lives, as I can assert from my own knowledge and long successful practice." He then proceeds to describe the way in which it is to be used. "This instrument, though not pointed, must yet be used with caution. You are first to pass one part thereof above, gently introducing it, and guarding and directing the bow as far as you can with all the fingers of the left hand, the instrument lying in the hollow of the hand, being careful that no fold or part of the vagina get between the instrument and the head of the child, which would at once hinder any hold of the head (and consequently foil you in the attempt), and bruise the part that intervenes. But a little care will easily prevent this. One part thus passed over the head, and under the os pubis, the other is to be passed near the os sacrum, and thus a laceration will be avoided. When those are passed, they are then to be brought close together, and if you please the screw may be put through and fastened with the button, though there is no occasion for the loss of so much time, for without doing this the hand will prove sufficient to keep them together; and thus you may extract the head, by drawing gently down. It is much better, as I have just observed, that the two parts of the forceps should not be joined or fixed by a screw, the hand being sufficient; and that for these reasons. First, because when they are screwed together, though they should not happen to be exactly opposite to each other, yet they will turn so as to take fast hold of the infant's head, and readily extract it. Secondly, in case one of the parts should slip, it is then easily returned to its proper post, without being taken wholly away; whereas, when they are screwed together, and then slip off on one side (which I have often experienced, in spite of the greatest care I could use), the instrument is to be repassed and screwed as at first. They have oftentimes slipped, and when I have expected the head of the child I have been deceived, and found the handle part come close, the instrument only in my hands, and the work all to do over again. I have always found the instrument far less apt to slip since I omitted fastening the parts together; and with more ease to the patient as well as myself, and in much less time than before, have found the head of the child fairly fixed in the instrument, that is between the two parts or bows: so that, in a few seconds of a minute, I have had the child's head with the instrument, after which little or no difficulty remains. Thus I have delivered several women since my coming to town, some of whom you will find mentioned in the case at the end of this treatise; and Mr. Giffard, in Case XIV. and elsewhere, frequently complains that his extractor slipt, which I am fully persuaded it would not have done if the parts had been left unjoined, as I now use them. I do ingenuously confess that I came by this hint and improvement by mere accident, as, I believe, is frequently the case in discoveries of the greatest importance. For many years my forceps happened to be made of so soft a metal as to bend or give way, or suffer some alteration in their curve. They were made as usual with the screw fixed to one part or side of them. These I used for some years; but they often happening to slip off sideways (as before mentioned), my opinion of the instrument was so much lessened, that for many years after I used it but seldom, and even not once in the space of ten years, during which time, when the child could not be turned, I employed the fillet only. This I freely communicated to a very ingenious practitioner, now living in the country, who will, I doubt not, remember it upon reading this. At length I caused another pair to be made me, of better metal, and some other improvements, the screw part being contrived to take out, and not fixed as in the former. This screw I happened to lose in the clothes at the delivery of a woman who, with her child, is now living, and in health, in town; and being sent for to another presently after, and being, indeed, forced to make the trial, found that the instrument did its office much better without the screw, or the two parts being fixed. All I can say in praise of this noble instrument must necessarily fall short of what it justly demands. Those only who have used it to their own advantage, and the security of their offspring, can be truly sensible of its real worth."

Chapman was aware that the forceps could not be employed with advantage till the greater part of the head of the child had passed through the brim into the cavity of the pelvis. The forceps cannot be used, he says, if the head does not lie very low, nor is their use to be otherwise attempted." He had clearly ascertained that it could not be used with safety if the head remained above the brim of the pelvis, and the uterus was imperfectly dilated. "I would of all things," he says, "advise the operator to be particularly cautious in his inquiry whether the infant in the womb be dead or not, if he chooses to employ the hook, or the child does not lie low enough for the use of the forceps, and the parts are so straightened that he cannot easily turn it; for there have been many deplorable instances of infants that have been drawn out this way as dead, whilst they have been really living." He admits, however, when it is past all dispute that the child is really dead, that then the delivery may with propriety be effected with the crotchet. From the history of the case of distortion of the pelvis related by Mauriceau, it is evident that though the Chamberlens possessed the forceps in the most perfect form, they had not become acquainted with the cases to which it was applicable. But Chapman had discovered that in distortion the head did not descend sufficiently low to be taken hold of by the forceps, and that the only method of delivery with safety to the mother was by lessening the volume of the child's head."

"Though I have in some places of this Treatise," he observes, "condemned the use of the hook, and shown that a child far advanced with its head is to be extracted with the forceps or fillet, yet I would not be thought to advance that it ought never to be employed: because there are some deformed subjects, as the two last mentioned, in whom the bones of the pelvis have so bad a structure, and the space between the protuberance frequently mentioned, and the os pubis, is so very small, as to render it altogether impossible for the head of a full-grown child to be naturally brought away. In these subjects the head cannot fall into the vagina low enough to be taken hold of by the forceps or fillet,

Fig. 54.*



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* These figures represent the forceps of Chapman and Giffard.

nor can it be turned without the greatest difficulty: and even when it is turned, it will certainly stick at the head. In this case it cannot be drawn away but by the hook, which will break into its texture, alter the form of it, and so render it fit to pass through that passage, which it could never do if it were whole." It thus plainly appears that we are not only indebted to Chapman for the first description of the midwifery forceps, but for the discovery of the principles which ought invariably to guide us in its employment.

LECTURE XXVIII.

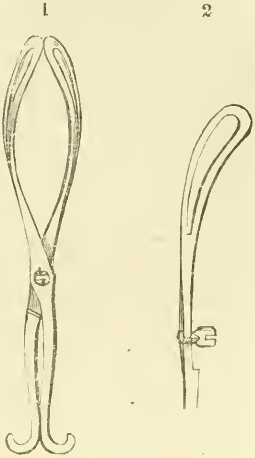
ON THE APPLICATION OF THE FORCEPS.

The midwifery forceps was invented and perfected by the Chamberlens about the middle of the seventeenth century, but it was first described by Chapman in 1733. "Almost every candidate for celebrity," observes Mr. Streeter, "has thought it necessary to modify the instrument; Dr. Churchill has given figures of more than fifty varieties." In the last half of the eighteenth century, or a few years earlier, the forceps had been altered by Mesnard, Gregoire, Rathlaw, Smellie, Levret, Bing, Burton, De Wind, Pugh, Wallis Johnson, Fried, Leake, Petit, Van De Laar, Coutouly, Pean, Sleurs, Orme, Lowder, Young, Aitkin, Mayer, Starke, Saxtorph, Osborn, Denman, Hamilton, Haighton, J. Clarke, and Thynne. [Mülder's plates were here exhibited, in which many of these instruments have been represented.] Dr. Willam Hunter appears to have been almost the only distinguished accoucheur, who lived during that period, who considered it unnecessary to modify the shape of the forceps. The instrument has undergone many changes during the present century, but that form which I prefer greatly above all others is the Chamberlen forceps, with the lock and wooden handles of Smellie — in fact, Denman's short forceps covered with leather; because it is easily applied, takes a fast hold of the head, and it may be employed with less risk to the mother than the forceps of Drs. Hopkins, David Davis, Naegele, Siebold, and others. But in truth I attach comparatively little importance to the shape and dimensions of the forceps you use, and think it nearly a matter of indifference whether it has a pivot lock or Smellie's lock, and whether the handles consists of the wood of or metal, provided the case will justify the use of forceps where it is had recourse to, and you know the principles which ought invariably to guide you in its employment. The observations which have been made upon the forceps during the last hundred and ten years have proved that it is not adapted to cases of difficult labour, in which the os uteri, vagina, and other soft parts, are in a rigid, swollen, inflamed, and undilatable state; where the umbilical cord is unusually short, or is twisted once or several times around the neck and trunk of the child, where the child is hydrocephalic, or the head greatly exceeds the natural size, and where the pelvis is obstructed by tumours, or much distorted by rickets or malacosteon. It is now admitted by all practitioners in this country that the forceps ought not to be employed where a great disproportion exists between the head of the child and pelvis from any cause. It is chiefly in cases of protracted and difficult labour, from feeble, irregular, or partial uterine action, from passions of the mind, original or accidental debility in the mother, and other constitutional causes which impair the energy of the brain and nervous system of the uterus, that the forceps are used with advantage, and where, if any disproportion exists between the fœtus and pelvis, it is only in a slight degree. The forceps is not applied because there is a great deficiency of space in the pelvis, a great want of due proportion between the head and pelvis, but because there is a want of power in the uterus to propel the child through it, the want of which power we endeavour to supply with the forceps. This is the only legitimate ground on which we can proceed in the application of the forceps, whether it be exhaustion, convulsion, hemorrhage, or whatever the circumstance may be which renders immediate delivery necessary to preserve the life of the mother and child. It is not for our own convenience, to spare ourselves the anxiety and fatigue of a protracted attendance upon any case of labour, to acquire skill and dexterity in the use of the forceps, that the instrument is to be applied, nor because it is in our power to do so, but in consequence of certain local and constitutional symptoms appearing in the parent, or because the child is in danger from the long-continued pressure, that we have recourse to artificial delivery. The gradual cessation of labour pains, and the descent of the head being arrested, are unquestionably the best indications we can have for the propriety of the interference of art. If the uterine contractions cease, and the head, swollen and compressed, becomes arrested or impacted in the pelvis, and there is exhaustion, fever, and disturbance of the brain, and we believe that the head of the child will not be expelled by the natural efforts, it is our duty to endeavour without delay to extract it with the forceps. To apply the instrument, when it is known with absolute certainty that the child is dead, would betray, to use the mildest expression, the highest degree of insensibility and folly.

In a great proportion of cases they are first labours in which the forceps is required; which proves that the difficulty frequently depends on the soft parts. It is not from the duration of the process, so much as from the condition of the patient, that you are to judge of the necessity for interference. In some women, whose nervous energy is feeble, exhaustion, delirium, or some other unfavourable symptom, occurs before the labour has continued twenty-four hours; in others there is no unfavourable symptom witnessed, though it is greatly protracted beyond this period. In general it is a very good practical rule, and well calculated to prevent the rash and unwarrantable use of the forceps, "that the head of a child shall have rested six hours as low as the perineum, that is, in a situation which would allow of their application before the forceps are applied, though the pains should have ceased during that time." But there are exceptions to this rule, and cases occur of rapid exhaustion, or some accident takes place suddenly, in which it would be wrong to comply with it. The membranes must be ruptured, and the os uteri fully dilated, before the forceps can be safely applied. The head may not have wholly escaped from the uterus, but the greater part must have done so, to render it possible to use the forceps without great risk. If the whole circumference of the os uteri can be felt, you must not think of the forceps, and the greatest care is required, though the posterior lip has gone up beyond the reach of the finger, if the anterior lip and cervix can be felt between the head and symphysis pubis. I have never met with a case in which the forceps was satisfactorily applied before the os uteri was fully dilated, and the head had descended so low that an ear could be felt. "Before the completion of the first stage of a labour," says Dr. Denman, "that is, before the os uteri be completely dilated and the membranes broken, the use of the forceps can never come into contemplation; because the difficulties before occurring may depend upon causes which do not require their use, or if required, they could not be applied with safety or propriety before those changes were made." In almost every case, says Dr. Burns, "where the forceps are beneficial, the head has so far entered the pelvis as to have the ear corresponding to the inner surface of the pubes, and the cranial bones touching the perineum." "No case," observes Dr. Merriman, "is to be esteemed eligible for the application of the forceps until the ear of the child can be distinctly felt."

Smellie invented a pair of long forceps, which he sometimes used when he found the head of the child so much forward over the os pubis, by the unusual projection of the sacrum and lower lumbar vertebra, that he could not push the handles of the short forceps far enough back to include within the blades the bulky part of the head which lay over the pubes. To remedy this inconvenience, he contrived a long pair, curved on one side and convex on the other; but these, he says, ought never to be used except when the head is small: for when the head is large, and the greater part of it remains above the brim, the parts of the woman may be inflamed and contused by the exertion of too much force. Where the vertex presents, but only an inconsiderable part of the head, resembling the small end of a sugar loaf, is forced down into the pelvis, after a protracted labour, we may infer that the head is either too large or the pelvis too narrow. In these cases, indeed, a long pair of forceps may take such firm hold, that, with great force and the strong purchase, the head will be delivered; but such violence is commonly fatal to the woman, by causing such an inflammation and perhaps laceration, of the parts, as is attended with mortification. In order to disable young practitioners from running such risks, and to free myself from the temptation of using too much force, I have *always used and recommended* the forceps so short in the handles that they cannot be used with such violence as will endanger the woman's life, though the purchase of them is sufficient to extract the head when one-half or two-thirds of it are equal to, or past, the upper or narrow part of the pelvis. Smellie was so fully aware of the danger of fatal contusion and laceration of the uterus and vagina necessarily incurred by the application of the long forceps, when the head of the child remained above the brim of the pelvis, that he did not venture to exhibit the instrument to the pupils of his class, from the dread that it would be misapplied: and it appears *he always used* and recommended the short forceps. Levret likewise invented a pair of long forceps, convex on one edge and concave on the other, which have been extensively employed on the continent, especially in France and Germany, for the purpose of drawing the head of the child into the cavity of the pelvis when the brim is contracted. The common French midwifery forceps, represented in these figures, will give you some idea of the instrument recommended by Levret, though not precisely the same.

Fig. 55.*



You will meet with two very great difficulties in attempting to apply the long forceps. The first is, that the head of the child always lies transversely, or diagonally, at the brim of the pelvis; so that if the blades of the instrument are passed up along its sides, which all admit they must be, one blade will be applied over the occiput, and the other over the forehead; and you can have no hold of the head in this way upon which you can depend. If you make the experiment upon a dead child, as I shall now do before you, you will at once be satisfied that the hold which the forceps has of the head is so insecure that it would be impossible to overcome any considerable resistance with the blades thus applied to the forehead and occiput; over the sides of the head they give you a firm hold. And in actual practice, in all the cases where I have seen an attempt made to deliver with the blades of the long forceps applied over the forehead and occiput, the instrument has soon lost its hold, and has slipped off the head, where any considerable extracting force has been applied. But if the instrument should not slip, the compression of the occiput and forehead would increase the length of the short diameter of the head, which corresponds with the contracted conjugate diameter of the brim, and the result would be an increase of the disproportion between the head and pelvis; the size of the head would be increased in the wrong direction — in fact, where it is required to be lessened. If you look at this plate of Maygrier you will be convinced of the truth of this.

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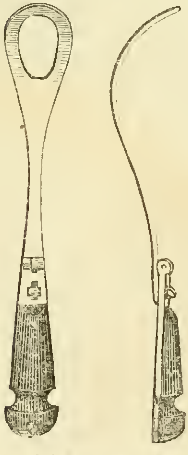
* Fig. 55. — 1, the instrument closed; — 2, a partial front view of one blade, to show the curve and peg by which it is locked.

But besides, before the greater part of the head has passed through the brim of the pelvis, the os uteri is never sufficiently dilated to allow of the long forceps being applied without the greatest danger. "The delivery of a female with the forceps, when the os uteri is fully dilated," observes Dr. Collins, "the soft parts relaxed, the head resting on the perineum, or nearly so, and the pelvis of sufficient size to permit the attendant to reach the ear with the finger, is so simple, that any individual with moderate experience may readily effect it. I have no hesitation in asserting, that to use it under other circumstances is not only an abuse of the instrument, but most hazardous to the patient. It is from being thoroughly convinced of these facts, by long and extensive observation, that I consider the forceps quite inapplicable when the head becomes fixed in the pelvis, and that the ear cannot be reached by the finger, except by violence, in consequence of disproportion existing between the head and pelvis, either owing to the former being unusually large, or the latter under size; in most instances measuring little more than three inches from pubes to sacrum, and in others less than this. When we consider that the blades of the smallest sized forceps used in Britain, even when completely closed, measure from 3⅛th inches to 3½, it is clear that were the bones of the pelvis denuded of their soft parts there would not be space to admit of their application. The French forceps measure, from blade to blade on the upper side 2½ inches, and are about ⅛th wider on the opposite side, meeting at the point of the blades to within ⅛th of an inch. Were we even to overlook altogether the safety of the mother, where the child's head measures 13½, 14½, or 15 inches in circumference, is so compressed, as it must be when the instrument is closed, there can scarcely be a hope of life. Of course, where the pelvis is roomy, this compression of the head, so as to close the forceps, is unnecessary, and in such cases the child is uninjured. How is it possible, with the forceps, to drag a child through a pelvis where there is not space, except by force, to introduce (as is commonly said) a straw, or where the smallest flexible catheter cannot, in some instances, be passed into the bladder? The results I have witnessed from such practice were most distressing; in some, the neck of the bladder, or urethra, either lacerated, or the injury by pressure from the forceps so great as to produce sloughing and consequent incontinence of urine; in others, the recto-vaginal septum destroyed; either of which renders the sufferer miserable for life; and in two cases, where the mouth of the womb was imperfectly dilated, so much injury inflicted on this part as to terminate in death. Such melancholy consequences strongly show the necessity of having recourse to the forceps with great caution, so as to avoid the abuse of an instrument which, when judiciously applied, is occasionally most beneficial. Almost all the unfavourable results may be prevented by using the instrument only when necessary for the safety of the patient, at the same time attending to the circumstances already stated, which are dwelt upon by many of our best writers on this subject when treating of the nature of the case in which it is eligible." The accuracy of these remarks is fully confirmed by all the forceps cases which have come under my observation, and which exceed sixty in number. Four of the mothers whose cases (55) are related in the First Report of my Clinical Midwifery, died from the rash and inconsiderate use of the forceps; seven had the perineum more or less injured; one the recto-vaginal septum torn; five were left with cicatrices of the vagina after sloughing; and one with an incurable vesico-vaginal fistula. In none did any benefit result from the instrument before the greater part of the head of the child had passed through the brim of the pelvis, and the orifice of the uterus was fully dilated. In one case only was the forceps advantageous, when the blades were applied and locked with great difficulty, and great force required to extract the head of the child. Only seventeen of the children were born alive and lived. I repeat once more that, in protracted labours, when the head has made no sensible advance for hours, and becomes compressed, the scalp puffy and swollen, the vagina dry, hot, and tender, the discharges offensive, and when the bladder cannot be emptied without the catheter, it is dangerous to trust longer to the natural efforts. If, along with these symptoms, there is tenderness of the abdomen, fever, incoherence, restlessness, and exhaustion, delaying long to deliver is invariably followed by the most injurious consequences. But if the os uteri is not fully dilated, and the greater part of the head has not passed through the brim, the forceps cannot be employed with advantage.

Most of the authors who have recommended the long forceps to be employed have been fully aware of the danger of the instrument, and the necessity for extreme caution in its use. "Sometimes it is useful," says Dr. Hamilton, "to employ a lengthened pair of forceps: but as in operating with that instrument the parts of a woman in contact with its blades must inevitably be pressed upon in a degree proportionate to the length of the instrument, the extent of its motion, or, in other words, to the force of the operator working with it, it is a very hazardous expedient in the hands of the inexperienced." When Dr. Hamilton was in London, twelve or thirteen years ago, the use of the long forceps was one of the subjects of conversation which I had with him, and I was astonished when he informed me that he had entirely for some time laid aside the short forceps. On further inquiry, however, it appeared that in no case did he ever use the long forceps until an ear could be felt; thus admitting that he never employed the long forceps where it was not possible to deliver with the short forceps, and to derive all the advantage that could be obtained from such means with much less risk. If I recollect right, Dr. Hamilton stated on that occasion that he had used the forceps, long and short, in his private practice, only about forty times in the whole course of his life. In respect to the frequency with which he employed the forceps, his practice probably coincided with that of Dr. Joseph Clarke, who says, in his valuable Report of the Dublin Lying-in Hospital — "Cases of convulsion excepted, I have rarely had reason to be well pleased with the effects of extracting instruments, and not unfrequently have I had much reason to deprecate their evil consequences. Whenever labour is protracted to a dangerous length, by unusual resistance, there is nothing but mischief to be expected from their application, but when the expelling powers are impaired by debilitating diseases, the interposition of an artificial extracting power is more rational and justifiable. Let it be remembered that in the hospital such means were employed in one of 728 cases, and in private practice it is so long since I have had occasion to use, or even to think of using them, that I am persuaded a fair opportunity of applying forceps with good effect will not occur to a rational practitioner in one of 1000 cases."

Where the child is dead, where a great disproportion exists between its head and the pelvis from any cause, and the os uteri is imperfectly dilated and the parts swollen and rigid, and an ear cannot be felt, and circumstances occur demanding immediate delivery, recourse must be had to the perforator, and not to the forceps. You will never, I hope, think of applying the forceps in a secret or clandestine manner. If you were so thoughtless as to attempt to do this, you would not succeed without the attempt being discovered, and your rashness and imprudence exposed. But you might introduce the vectis or lever over the head without the patient or nurse being aware of the fact; and this is one of the many strong objections which I have to the instrument, of which the following figures are representations.

Fig. 56.



It has a joint to render it more portable, and some practitioners carry it in their pocket to every case of labour they attend, and make use of it without apprising the patient. Such conduct, I look upon, with Dr. Collins, "as unjustifiable in the extreme, and am happy to think it is the practice of those only who have little character to lose."

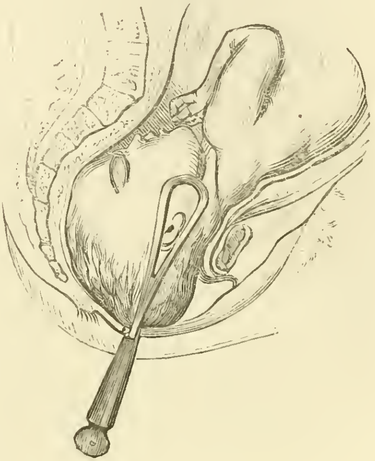
In all cases of protracted and difficult labour in which you consider it requisite to employ the forceps, or to perform the operation of craniotomy, or any other operation in midwifery, you will promote your own peace of mind and professional interests, and the welfare of your patients, by previously consulting another experienced practitioner, whenever it is practicable to do so. When exhausted with fatigue and watching, we are not in a condition to form a sound opinion respecting the necessity for the interference of art, and it is agreeable, in all cases of difficulty and danger, to have the responsibility divided by a consultation, and mistakes in practice prevented by every means in our power. After all the circumstances of the case have been deliberately considered in consultation, and the necessity for the employment of the forceps satisfactorily proved to exist, it is right, before proceeding to apply the blades, to state to the husband and relations, and even to the patient herself, if she is in a condition to comprehend, the reasons why you have resolved to trust no longer to the efforts of nature, and even to explain to her what you are going to do. All women know well the danger they incur when delivered with instruments, and dread being cut or torn by them. This fear is often removed, and the entire consent of the patient obtained, by showing to her one or both of the blades unlocked of the short forceps, covered with soft leather, which makes it not only in appearance but in reality a safer instrument than when the steel blades are bare.

Having obtained the patient's consent to the application of the forceps, and a promise to endure the pain with as much steadiness and resolution as possible, let her lie on the left side, with the nates close to the edge of the bed, and the knees bent and drawn up towards the abdomen. Let the nurse support the right thigh, and keep the knees separate, and let the patient take hold of the hands of a steady person before her, who can control her feelings on the occasion. Ascertain by passing the catheter that the bladder is empty before you proceed further. Then take a blade of the forceps by the handle in your left hand, and pass all the fingers of your right hand in a conical form covered with lard slowly into the orifice of the vagina, and if it is a first child, and the parts are contracted, gently dilate them, and press back the perineum. When this has been sufficiently effected, pass the four fingers of the right hand forward into the vagina deeply, as far indeed as the root of the thumb, between the head of the child and front of the pelvis. Dr. Denman says, "the fore-finger of the right hand should be passed between the ossa pubis and the head of the child to the ear." I would recommend you to pass all the fingers completely over the side of the head, so as to feel the ear, and to determine positively to which side of the pelvis the occiput is directed. If you introduce only one finger, or all the fingers, in the manner represented in the plates of M. Moreau and Dr. D. Davis, now before you, you cannot possibly know what the actual position of the head is before you introduce the blades, and may turn the head in the wrong direction. I believe it is possible in every case, and I consider it necessary, to ascertain exactly the position of the head before passing the forceps. If the head is so firmly impacted that you cannot pass the fingers not only to the ear and side of the head, behind the front of the pelvis, but completely around the whole head, you will do nothing but mischief with the forceps.

Pass, then, the four fingers of the right hand completely over the side of the head and ear behind the symphysis pubis, for in a vast proportion of cases an ear is felt in this situation, and not at either side of the pelvis, and when you have determined the position of the head, the point of the blade in the left hand is to be slowly and cautiously, without any force, slid up between the head and your fingers, till the blade is closely applied over the side of the head, and the lock is about an inch and a half from the fore part of the orifice of the vagina. When you begin to pass the blade, you see in the phantom that its handle is directed backward to the perineum, but as its point slides along the convex surface of the head, the handle is gradually brought forward to the pubes. You may either have the first blade held firmly in its situation by an assistant, or you may keep it in its place with the ring and little finger of your left hand, while you are engaged in passing the second blade over the opposite side of the head, which is usually attended with greater difficulty than the first. I prefer entrusting the first blade to another person, while I am engaged in passing up the four fingers of my left hand as far as possible over the side of the head in the hollow of the sacrum, and conducting the second blade with my right hand over it. When this has been done in a satisfactory manner, the blades lock with the greatest ease — they come together almost spontaneously. But where the blades have not been properly applied to the opposite and corresponding sides of the head, but one is toward the forehead and another to the side of the occiput, the extremities of the handles are in different directions, and the blades cannot be made to lock without drawing the handles forcibly together. Where this happens, the best plan is to withdraw one or both blades, and to introduce them in such a manner that they shall cover exactly the opposite sides of the head.

When the blades are thus applied, take care that no part of the mother is included in the lock, before you begin to extract. When a pain comes on grasp the handles of the instrument in your right hand, place your hand over or above the handles, and bring them slowly forward towards the symphysis pubis, and after keeping them there for an instant move them backward slowly and steadily towards the perineum, exerting upon the head a slight degree of extracting force. This action must be repeated, and at the same time you should endeavour to turn the face round into the hollow of the sacrum. When the labour pain goes off, take the pressure of the blades of the forceps from the head, and merely keep the handles together to prevent the instrument from slipping, and renew the traction with the same caution, but with a little more force. Until the head is brought so low as to press upon the perineum and distend it, the extracting force should be directed backward, but when the head has advanced, and the perineum becomes very prominent, the action should be directed more forward toward the pubes. In some cases, by the exertion of very little extracting force, and in a very short time, sometimes even during a single pain, the head is brought down so as to distend the perineum, the ears are placed to the sides of the pelvis, and the face is in the hollow of the sacrum, and further advanced than is represented in the following figure.

Fig. 57.



In other cases a considerable period elapses, and much force is required before the head can be brought into this situation, and occasionally we do not succeed in bringing it so low after exerting all the force we dare employ. When the head begins to advance through the os externum, and the perineum is greatly distended, you must change the direction in which you extract. Now place your hand under or below the handles of the forceps, and gently draw the head during the pains forward to the symphysis pubis away from the perineum, and move it gently from side to side. It is necessary to observe the condition of the perineum while the head is passing, and to regulate every movement with the forceps, by seeing what degree of pressure it is able to bear, and to support it with the left hand most carefully when it is rigid: imitate nature, by allowing the head to press against it for a considerable time, without exerting any considerable extracting force. The utmost circumspection is required in this part of the operation, and in some cases, where you see the perineum beginning to tear in spite of all your care, the best plan is to remove the blades of the forceps, and leave the expulsion of the head to the natural efforts.

I shall read to you Dr. Denman's account of the application and action of the forceps, which is remarkably full, plain, and easy to be understood, for the purpose of supplying any omissions or deficiencies in the previous description, and to make you more familiar with the subject.

"The first part of the operation consists in passing the forefinger of the right hand behind the ossa pubis and the head of the child to the ear; then, taking the part of the forceps to be first introduced by the handle in the left hand, the point of the blade is to be slowly conducted between the head of the child and the finger till the instrument touches the ear: there can be no difficulty or hazard in carrying the instrument thus far, because it will be guided, and in some measure shielded, by the finger. But the further introduction must be made with a slow semirotatory motion, keeping the point of the blade not rigidly, yet closely, to the head of the child, by raising the handle toward the pubes. In this manner the blade must be carried gently along the head till the lock reaches the external parts near the anterior angle of the pudendum. The point of the blade, while introducing, sometimes hitches upon the ear of the child, and it then requires a little elevation. But when it has passed the ear, and is beyond the guidance of the finger, should there be any check to the introduction either of this or the other blade, it should be withdrawn a little, to give us an opportunity of discovering the cause of the obstacle, which we must never strive to overcome by violence, though we must proceed with firmness. When the first blade is properly introduced, it must be held steadily in its place by pressing the handle towards the pubes, and it will be a guide in the introduction and application of the second blade. Let the second blade be introduced in this manner. Keep the blade first introduced in its place with the two lesser fingers of the left hand, and carry the fore-finger of the same hand between the perineum and head of the child as high as you can reach. Then take the second blade of the forceps by the handle in the right hand, and, conveying the point between the finger placed within the perineum and the head of the child, conduct the instrument, with the precautions before mentioned, so far that the lock shall touch the interior part of the perineum, or even press it a little backwards. In order to fix the two blades thus introduced, that which was placed towards the pubes must be slowly withdrawn, and carried so far backwards that it can be locked with the second blade retained in its first position; and care must be taken that nothing be entangled in the lock by passing the finger round it. When the forceps are locked, it will be convenient to tie the handles together with sufficient firmness to prevent them from sliding or changing their position when they are not held in the hand, but not in such a manner as to increase the compression upon the head of the child. Should the blades of the forceps be introduced so as not to be opposite each other, they could not be locked; or if, when applied, the handles should come close together, or be at a great distance from each other, they would probably slip, or there would be a failure of some kind in the operation, as the bulk of the head would not be included, or they would be fixed on some improper part of the head; though allowance is to be made for the difference in the size of the heads of children. But if a case be proper for the forceps, if they be well applied, and we were to act slowly with them, there would not be much risk of failure or disappointment. The difficulty of applying the forceps is most frequently occasioned by attempting to apply them too soon, or by passing them in a wrong direction, or by entangling the soft parts of the mother between the instrument and the head of the child, against all which accidents we are to be on our guard.

"When the forceps are first locked, they are placed backwards, with the lock close to, or just within, the internal surface of the perineum; and they can have no support backwards, except the little which is afforded by the soft parts. The first action with them should therefore be made by bringing the handles, grasped firmly in one or both hands, to prevent the instrument from playing upon the head of the child, slowly towards the pubes till they come to a full rest. Having waited a short interval with them in that situation, the handles must be carried back in the same slow but steady manner to the perineum, exerting, as they are carried in the different situations, a certain degree of extracting force; and after waiting another interval, they are again to be carried towards the pubes, according to the direction of the handles. Throughout the operation, especially the first part, the action of that blade of the forceps originally applied towards the pubes must be stronger and more extensive than the action with the other blade, this having no fulcrum to support it, and chiefly answering the purpose of regulating the action of the other blade. If there were any labour pains when the operation was begun, or should they come on in the course of it, the forceps should only be acted with during the continuance of the pains; the intention being, not only to supply the want or insufficiency of the pains, but to follow them, and imitate also the manner in which they return. By a few repetitions of this alternate action and rest before described, we shall soon be sensible of the descent of the head; and it will be proper to examine very frequently, to know the progress made, that we may not use more force than needful, nor go on with more haste than may be expedient or safe. In every case we ought to proceed slowly and circumspectly, not forgetting that a small degree of force, continued for a long time, will in general be equivalent to a greater force hastily exerted, and with infinitely less detriment to the mother or child. But after some time, should we not perceive the head to descend, the force hitherto used must be gradually increased, till it be sufficient to overcome the obstacles to the delivery of the patient. It was before observed, as the head of the child descended, that the face would be accordingly turned towards the hollow of the sacrum, without any aim or assistance on our part. Of course the position of the handles of the forceps, and the direction in which we ought to act with them, should alter; for they becoming first more diagonal or oblique with respect to the pelvis, and then more and more lateral, every change in their position will require a differently directed action, because the handles should ever be antagonists to each other. In proportion also to the descent of the head the handles of the forceps should approach nearer to the pubes; so that, in the beginning of the operation, though we acted in the direction of the cavity of the pelvis, towards the conclusion we should act in that of the vagina. When we feel that we have the command of the head, by its being cleared of the pelvis, and the external parts begin to be distended, we ought to act yet more slowly, especially in the case of a first child, or there would be great danger of a laceration of the soft parts; and this can only be prevented by acting very deliberately in the direction of the vagina — by giving the parts time to distend — by duly supporting the perineum, which is the part chiefly in danger, with the palm of the hand — by soothing and moderating the hurry and efforts of the patient — and, in some cases, by absolutely resisting for a certain time the passage of the head through the external parts."

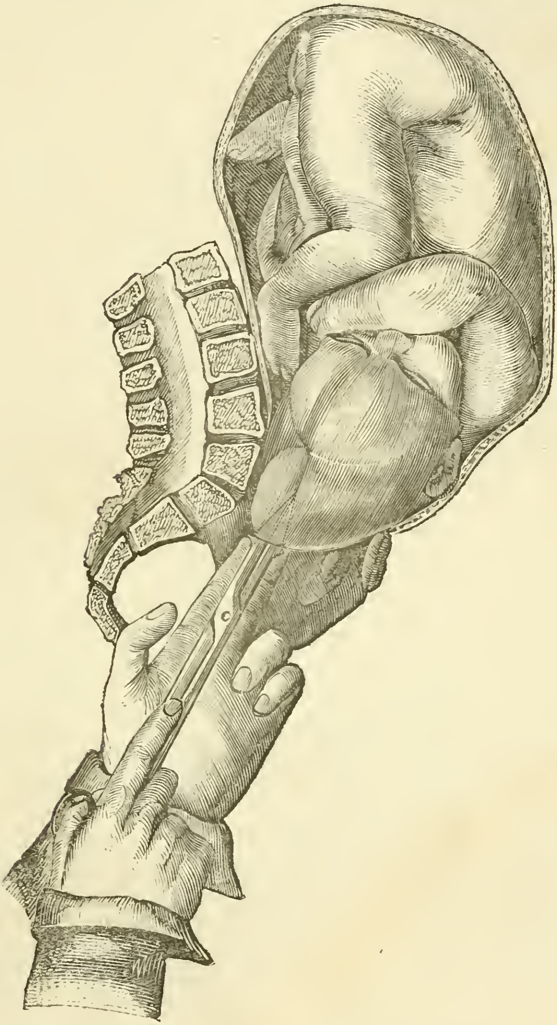
LECTURE XXIX.

ON THE OPERATION OF CRANIOTOMY, THE INDUCTION OF PREMATURE LABOUR, AND THE CÆSAREAN SECTION.

Where the child is dead, where a great disproportion exists between its head and the pelvis from any cause, and the os uteri is imperfectly dilated, and the parts swollen and rigid, and an ear cannot be felt, and circumstances occur demanding immediate delivery, recourse must be had to the perforator, and not to the forceps. It is in difficult labour from distortion of the pelvis that we are most frequently compelled to open and extract the head; and where this exists in a high degree, and the brim is so contracted that the head cannot enter it, the operation of craniotomy often requires the employment of strong extracting force for several hours: and fatal contusion and laceration of the uterus, vagina, bladder, and rectum, can only be prevented by the greatest caution and dexterity, and a perfect knowledge of the structure of all the parts. It unfortunately happens that, in some cases, before the operation is performed, the soft parts have already been injured by the long-continued pressure they have sustained, — the same thing happens here which takes place in strangulated hernia, where the operation has been delayed too long, — and sloughing follows. In cases of slight disproportion between the head and pelvis, or where there is none, but delivery becomes necessary in consequence of convulsions, hemorrhage, or exhaustion, the operation is attended with little difficulty and danger; much less than the application of the forceps. The position of the patient ought to be the same — the left side, near the edge of the bed — whether you are going to use the forceps, perforate the head, induce premature labour, deliver by turning the child, or remove a retained placenta. The difficulty of all these operations will be greatly increased if you allow patients to lie on the back, as they do, during labour, on the continent, or on the left side at a distance from the edge of the bed. No practitioner, whatever the extent of his experience may be, ought, in my opinion, to open the head of a child, without the most urgent necessity, unless he is absolutely certain that the child is dead, before consulting another accoucheur. Where the bladder is distended with urine, and the urethra is much pressed upon by the head of the child, you will introduce the catheter more easily and safely after the head has been lessened than before perforation.

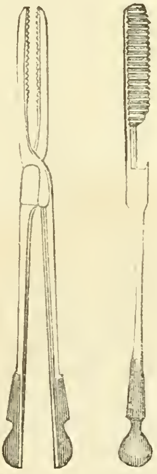
If the head is in the cavity of the pelvis, or the greater part of it has passed through the brim, and it is not impacted, and the os uteri is fully dilated, no difficulty can be experienced in perforating and extracting the head. With the fore-finger of the right hand carefully examine the situation of the head; and if you can feel a suture or fontanelle, let the point of the perforator pass into it; but if the head is much swollen, and you cannot distinguish either of these, resolve to open the head, in the most depending part; and if the instrument is of sufficient strength, it will pass without much difficulty, even through the centre of either of the parietal bones. Having with the fore-finger of the right hand determined the point where the perforator is to enter, slide up the fore and middle fingers of the left hand, before withdrawing the fore-finger

Fig. 58.



of the right, to this point; and in the groove formed between these fingers of the left hand, slowly and carefully introduce the perforator, previously warmed; and when it has reached the head, press it firmly forward, during a labour pain, through the integuments and bones, as far as the rests will permit it to go, by a boring or semi-rotatory motion. Where a great effusion is formed under the scalp, if the instrument is not driven forward with sufficient force, you will open the tumour of the scalp without opening the skull, as I have seen happen more than once, to the annoyance of practitioners. When the perforator has been introduced, in the manner represented in the engraving (Fig. 58), withdraw the fingers of the left hand, while with the right you keep the instrument from receding. If you remove the pressure with the right hand from the handles at this time, the point will escape from the head, and the skull, if perforated at all, will not be so to a sufficient extent to enable you afterwards to use the crotchet. Having by firm pressure prevented this accident, take hold of one of the rings of the handles of the perforator with your left hand, and the other with the right, and draw the handles widely asunder, and at the same time press the handles forward, that the points may not slide back from the head. Having made a large lacerated opening in the integuments and bones, close the handles, and with the fore-finger of the left hand ascertain that the points are still within the head as far as the rests, and then turn the handles round about a quarter of a circle, and open them slowly, with the same precautions, and to a similar extent. Having made a large crucial incision, pass the perforator within the skull, and turn it freely around in every direction until the brain is completely disorganized, and a considerable portion of it has escaped. It is right to do this effectually, and to allow an interval of a quarter of an hour or longer to elapse, that more of the brain may escape, and the bones collapse, before attempting to extract the head with the crotchet. All syringes and instruments for scooping out the brain are quite unnecessary. Then, in your right hand, take the handle of the common crotchet, which should neither be very sharp not very blunt in the point, and with the fore and middle fingers of the left hand introduce it through the opening in the head, and still more completely destroy the texture of the brain, and draw out as much of it as you can through the opening. Then fix the point of the crotchet on the inside of the head behind, I mean on the part which corresponds with the hollow of the sacrum, at as great a distance as possible from the opening in it made with the perforator, and pass up the fore and middle fingers of your left hand between the posterior wall of the vagina and the head, till their extremities are exactly opposite to the part where the point of the instrument is fixed within. When a pain comes on, press the point of the crotchet against the bone, laying firm hold of its handle with your right hand, while you press firmly the points of the fingers of the left hand on the outside of the head, and at the same time turn the ring and little fingers of this hand around the handle, or rather shank, of the crotchet, close to the orifice of the vagina. In this manner you form a double crotchet, far more safe and powerful than that which was invented by Smellie, which has fallen into complete disuse, because it tore the bones and integuments to pieces, but did not extract the head. With the crotchet fixed on the inside of the bones of the head behind on the part lying in the hollow of the sacrum, and the fore and middle fingers of the left hand on the outside, and with the other two grasping the shank of the crotchet, you can exert a great degree of extracting force, and you will often succeed in completing the delivery in a short period, if the perineum is not rigid. The head should always be drawn backward till the perineum is put upon the stretch, and to prevent the bones from being torn, and the hold with the crotchet lost, the traction should be made slowly and steadily, and during the pains, and time given for the parts to dilate. But if there is any considerable obstruction to the head, however carefully the extracting force may be applied, the point of the crotchet will tear away the bone upon which it is fixed, and it must be placed upon another part of the bones of the head; or you may lay aside the crotchet altogether, and employ the craniotomy forceps, which undoubtedly does in some cases possess advantages over the crotchet. If you know how to form the double crotchet which I have described, and which is one of the most safe and powerful weapons in midwifery, and most frequently sufficient to complete the delivery without any other means, the mother is exposed to no danger from laceration of the bones of the head and slipping of the crotchet, for the point of the instrument is constantly covered with the extremities of the fingers, and the two hands never act but in concert. But where the bones are readily torn, and you are compelled repeatedly to seek a fresh hold, and perhaps meet with some difficulty in fixing the instrument again, I would recommend you to lay aside the crotchet, and try the craniotomy forceps, which is represented in this figure, the blades of which resemble somewhat the jaws of a crocodile, and which I have employed satisfactorily in many cases of difficult labour from distortion of the pelvis and other causes. The lock is the same as the lock of the common forceps, and the blades are likewise introduced separately, and then brought together and fixed. One blade is introduced within the head, and the other on the outside, with the same caution as the second blade of the common midwifery forceps. The ragged edges of the bones should be covered with the integuments before you begin to extract, and in operating with the crotchet it is of great importance frequently to pass the finger around the opening in the head, to ascertain if

Fig. 59.



there is not some sharp and uncovered portion of bone pressing against the vagina. When the craniotomy forceps is applied so as to include a large portion of the integuments and bones of the head, the hold you obtain with it is very secure, and you may not only exert a much greater degree of force than you could employ with the crotchet, but you can accommodate the head much better to the axis of the outlet of the pelvis, and protect the perineum, which is exposed to great danger from laceration in all cases of craniotomy. When the head is drawn entirely forward out of the vagina with the crotchet, the perineum must, as you require both hands to wield the instrument, be supported by an assistant, who cannot know the degree of force which you are exerting at any time. If the craniotomy forceps be employed, you can support the perineum with your left hand, while you are operating with the right, and drawing the head forward towards the pubes. With the forceps the perineum is certainly exposed to less risk than with the crotchet, but I admit that it may be seriously injured with the forceps if it be a first child, and the bones of the head, compressed into a shape like a wedge, are drawn hastily forward.

In cases of great distortion, where the head cannot enter the brim of the pelvis to any extent, and the os uteri is imperfectly dilated, there is no instrument after perforation so efficient — none to be compared with the crotchet. I have tried all varieties of craniotomy forceps in such cases, and can assure you that they are totally inapplicable unless the os uteri is widely dilated and the head has made considerable progress through the brim into the cavity of the pelvis. M. Baudelocque has invented a huge instrument, weighing four pounds, for crushing the head in these cases, called céphalotribe, which I now show you, but it cannot be applied to the head above the brim of the pelvis, and if the os uteri is undilated. In M. Baudelocque's cases the effects of injurious pressure were striking, and they would probably have been much slighter had the perforator and the crotchet been employed. Great care must be taken in perforating the head in cases of extreme distortion, that the os uteri is not wounded with the sharp edges of the instrument. To obviate this, if the outlet is not so much contracted as to prevent the hand from being introduced, the fore and middle fingers of the left hand, or all the fingers, should be passed up within the os uteri to the most depending part of the head, and the opening made in the same manner as already described, while the orifice is protected by the finger expanded. The undilated state of the uterus adds greatly to the difficulty. In extracting the head with the crotchet, it not unfrequently happens that the bones of the cranium are all torn to pieces, and removed, before the base of the skull has entered the brim of the pelvis. It is impossible, under such circumstances, to fix the point of the crotchet in the foramen magnum, as some recommend; and the best mode of proceeding is to pass the fingers of the left hand over the head as far as possible, and to slide up the crotchet between the finger and the outside of the head, and fix its point in one of the orbits, about the angles of the lower jaw, or wherever a secure hold can be obtained. In this manner, as recommended by Smellie, I have sometimes succeeded in extracting the head in a short time, where I had begun to despair of ever doing so by fixing the crotchet on the inner surface of the base of the cranium, or by any other means. Indeed, in cases of this description you must be prepared to encounter very great difficulties; but when you look at this distorted pelvis from malacasteon, which measures only 1¾ inches from the last lumbar vertebra to the symphysis pubis, and know that two children, at the full period, were drawn through it without destroying the mother, you may conclude that few cases of distortion can possibly occur where you will not ultimately succeed in effecting the delivery with the crotchet. What the degree of distortion is which renders the operation of craniotomy impossible I am unable to state; what is impossible to one, may not be so to another practitioner, possessed of greater power, dexterity, and patience.

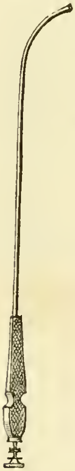
In the table (see pp. 313–316) the results are contained of one hundred and twenty-seven cases of difficult labour in which it was necessary to deliver by opening the head. After carefully examining all the details of these, I feel satisfied that in none was the interference premature, and that in several, had the delivery been sooner effected, the fatal consequences which ensued would have been prevented. I do not believe there is one of these cases in which the operation was resorted to without a consultation, and the necessity and propriety of the measure fully admitted.

ON THE INDUCTION OF PREMATURE LABOUR.

The history of this operation, which is the greatest improvement in midwifery since the invention of the forceps, was first given by Dr. Denman about 1795. "We have before alluded," he says, "to this operation as a method of preserving the lives of children, without adding to the danger of women; if, in any case, the pelvis were so much distorted, or so small as absolutely to prevent the passage of the head of a full-grown child, and yet not so far reduced in its dimensions as to prevent the head of a child of a much less size from passing through it. Melancholy are the reflections, where a woman has a very much distorted pelvis (and such women have usually wonderful aptitude to conceive), that there should be little, if any, chance of preserving the lives of their children; and yet, in the course of practice, I have in several instances been called to the same woman in five or six successive labours, merely to give a sanction to an operation by which the children were to be destroyed. It is to the credit of the profession that every method by which the lives of parents and children might be preserved has been devised and tried; and though frequent occasions for using some of these methods cannot possibly occur in any one person's practice, it is right that all should be acquainted with what has been proposed and done in every case, with or without success.

"The first account of the method of bringing on premature labour was given to me by Dr. C. Kelly. He informed me that about the year 1756 there was a consultation of the most eminent men in London at that time, to consider of the moral rectitude of, and advantages which might be expected from, the practice, which met with their general approbation. (The first case in which it was deemed necessary and proper fell under the care of the late Dr. Macauley, and it terminated successfully. The patient was the wife of a linen-draper in the Strand.) Dr. Kelly informed me that he himself had practised it, and, among other instances, mentioned that the operation had been performed three times upon the same woman, and twice the children had been born living. The thing has often been the subject of conversation, and proposed by writers, but some have doubted the morality of the practice; and the circumstances which may render the operation needful and proper have not been stated with any degree of precision."

Fig. 60.



The morality, perfect safety, and the utility of the operation, have been established, not only in cases of distorted pelvis, but in some of the dangerous diseases of pregnancy, by the experience of all the most eminent practitioners in Great Britain during the last eighty-seven years, and I do not know that it has often, if ever, been employed for criminal purposes in this country. In cases of slighter distortion, recourse should not be had to this operation until it has been proved by one or more labours that a child at the full period would not pass without lessening the head. Labour should not be brought on until the seven and a half month of gestation, or a little later where it is known that the pelvis is very little contracted. In cases of very great distortion of the pelvis, the induction of premature labour at an early period, even of the first pregnancy (as has already been stated, before the sixth month), is likewise known to be a safe operation, and to render craniotomy and the Cæsarean section wholly unnecessary. The only effectual method of bringing on premature labour is to puncture the fœtal membranes and discharge the liquor amnii. I have repeatedly detached the membranes with a catheter from the lower part of the uterus, but labour has not followed. I have strong objections to the exhibition of ergot for the purpose of inducing premature labour, without taking the uncertainty of its effects into account. I have successfully employed the probe-pointed catheter (represented in the preceding figure) with a stilette in many cases to puncture the membranes, when I could not do so with instruments less curved and having sharp points.

When you are about to induce premature labour, pass up the fore-finger of the right hand to the os uteri, and when you have ascertained its precise situation slide up along this finger the fore and middle fingers of the left hand to the posterior lip; the points of the finger should if possible touch the posterior lip; then withdraw the fore-finger of the other hand, and take the handle of the instrument with it, and pass up the point into the groove formed between the fingers of the left hand, to the os uteri, and gently press it forward along the cervix into the cavity of the uterus, about an inch and a half or two inches, when the membranes will generally be felt offering a slight degree of resistance. The stilette should then be pressed forward with the thumb, and a second puncture made through the membranes before withdrawing the instrument. The blunt point of this catheter enables us to pass it into the uterus with safety, where the os uteri is so high up that the finger cannot even reach the anterior lip. When the liquor amnii has escaped, labour follows, and if the presentation is natural no peculiar treatment is required.

I have been informed that some accoucheurs on the continent induce premature labour by forcing a piece of sponge into the os uteri, which I consider very objectionable. Uterine contractions might be excited, it was stated to me last year by a German physician, without forcing the sponge into the os uteri — by simply pressing it into the upper part of the vagina. I have lately had an opportunity of putting this plan to the test, and it completely failed.

ON THE CÆSAREAN SECTION.

Having already defined, as clearly as I possibly can, the cases of difficult labour in which it is justifiable to employ this method of delivery, I have nothing further to say on the subject. I have never seen the operation performed on the living body. On the dead body it is not a difficult matter, for the gravid uterus is at once brought into view by a long incision through the abdominal parietes in the direction of the linea alba. But the child soon dies after respiration has ceased in the mother.

When Dr. Hull, of Manchester, performed this operation on a woman with distorted pelvis, he made a transverse incision nearly six inches in length, and higher than the umbilicus, in the right side of the abdomen, to which part the fundus uteri was inclined, through the integuments, muscles, and peritoneum. He then made an incision of the same length, and in the same direction, through the parietes of the uterus, and with great ease and expedition extracted a child which had been dead for some days. The placenta was extracted at the wound without any difficulty. The intestines now began to protrude at the wound, and it was not without a great deal of attention and trouble that they were reduced and retained in the cavity of the abdomen, whilst he stitched the external incision by means of the uninterrupted suture, carefully avoiding the peritoneum. The quantity of blood lost during the operation did not exceed three or four ounces, and no artery was divided that required a ligature, or any application made to it for the purpose of restraining hemorrhage. The patient died.

Graefe performed the operation at least once successfully. The time of operation, he says, should if possible be that of natural labour; the place of the incision the linea alba: but if the uterus does not lie in the middle of the abdomen, and cannot be brought there, the incision must be carried in a line over the fœtus. To prevent protrusion of the intestines they must be carefully removed from the face of the uterus, and fixed with three warm sponges, each a foot long and six inches wide, so as to leave a free space eight inches long and four broad for an incision of nine French inches in length through the abdomen, and of four inches and a half through the uterus. In dressing the wound three sutures and circular plasters should be used.

Mr. Knowles has related a successful case of Cæsarean section, in the fourth volume of the Provincial Medical and Surgical Association. The woman was thirty-six years of age, and had been delivered of several living children. During a pregnancy in 1829 she had pains in the hips and loins, with loss of power in the lower extremities. She miscarried after this several times. In her ninth pregnancy Mr. Knowles was called to see her on the 15th May, 1835, labour having commenced about 4 P.M., of the 14th. The sacrum, with the lower lumbar vertebra, projected, and at the same time descended far into the cavity of the pelvis, and occupied a large portion of it, and resembled the child's head. The ossa pubis were bent inwards so much that they approached very near to the distorted vertebræ. The presentation could not be ascertained. The space left by the deformity did not exceed two inches in length by less than one in breadth. The head could not be felt, and therefore could not be opened. The Cæsarean operation was performed by Mr. Knowles thirty hours after the commencement of the labour; the external incision, about ten inches in length, was made through the linea alba immediately on the left side of the umbilicus. A portion of intestine immediately protruded. The incision into the uterus was commenced near its fundus by passing the scalpel carefully through its parietes, which were about an inch in thickness, so as to allow the admission of two fingers; using the fingers as a director, the opening was rapidly enlarged, by which the placenta was exposed and a brisk hemorrhage produced. Passing my hand by the side of the placenta, says Mr. Knowles, I ruptured the membranes, and without difficulty took out the child, which was living. The placenta was then detached, some coagula were removed, the uterus contracted, and the hemorrhage, which probably did not exceed sixteen ounces, was arrested. The external integuments were brought together by stitches, which were inserted at somewhat more than an inch apart. Adhesive straps were applied in the intervals, and the whole was secured by a compress and bandage. Tympanites and several alarming symptoms followed the operation. The wound did not heal by the first intention, so that the serous and purulent fluids readily escaped. Had the condition of this woman been known during pregnancy, which probably was not the case, as it is not alluded to in the history, the necessity for the operation would have been obviated altogether by puncturing the ovum in the early months.

A TABULAR VIEW OF ONE HUNDRED AND TWENTY-SEVEN CASES OF DIFFICULT LABOUR IN WHICH DELIVERY WAS EFFECTED BY THE OPERATION OF CRANIOTOMY.

No.	Date.	Causes of Difficulty.	Hours in Labour.	Result.
1	June 28, 1823	1st labour—Impaction of head; small pelvis; swelling of soft parts; long [forceps	72	Recovered—Vesico-vaginal fistula.
2	July 12, 1823	1st labour—Rigidity, exhaustion, convulsions: long forceps	50	Recovered—Uterine inflammation.
3	July 28, 1824	1st labour—Pelvis and extremities distorted by rickets	67	Recovered—Uterine inflammation.
4	Aug. 1, 1824	Face presentation	58	Recovered.
5	Oct. 29, 1827	9th labour—Uterine hemorrhage from detachment of placenta	12	Died—Inflammation of the uterus.
6	Nov. 2, 1827	1st labour—Distortion of pelvis; head and arm presenting; child dead	72	Recovered—Uterine inflammation.
7	Dec. 3, 1827	Distorted pelvis; arm presentation with head; turning; head impacted	90	Recovered — Severe inflammation.
8	Feb. 29, 1828	1st labour—Head impacted many hours; retention of urine; great exhaustion	36	Recovered.
9	March 2, 1828	3d labour—Head fixed in brim; great exhaustion; extraction difficult	40	Recovered.
10	March 12, 1828	Hydrocephalus of fœtus; dropsy of amnion; sixteen pints liquor amnii	30	Died—Uterine inflammation.
11	April 3, 1828	1st labour—Distorted pelvis; prolapsus of cord; swollen and tender vagina	84	Recovered.
12	May 9, 1828	1st labour—Convulsions; rigidity	—	Recovered.
13	July 3, 1828	1st labour—Distortion of inlet and outlet of pelvis; head and foot impacted [in brim; cord prolapsed	24	Recovered—Severe inflammation.
14	Aug. 6, 1828	Enormous œdema of thighs and external parts; a large exomphalos	24	Recovered.
15	Sept. 19, 1828	Swelling of scalp; head impacted; pains feeble	48	Recovered.
16	Nov. 5, 1828	Uterine hemorrhage from detachment of placenta	21	Died—Hemorrhage.
17	Nov. 18, 1828	Distortion of pelvis; regular labour-pains	48	Recovered—Uterine inflammation.
18	Dec. 16, 1828	Impaction of head; retention of urine; abdomen tense and painful; delirium	48	Recovered.
19	Feb. 4, 1829	2d labour—Head swollen, and impacted in brim of pelvis	48	Recovered—Uterine inflammation.
20	March 27, 1829	1st labour—Rigidity; impaction; exhaustion; delirium; lacerated perineum	72	Died—Sloughing.
21	April 29, 1829	1st labour—Cessation of uterine contractions; head fixed in brim; bladder [distended	144	Recovered.
22	July 14, 1829	Hydrocephalus of fœtus; dropsy of amnion	60	Died—Phlebitis; gangrene of lung.
23	Aug. 18, 1829	Exhaustion; child dead two days	20	Recovered—Recto-vesical fistula.
24	Autumn, 1829	1st labour—Impaction of head; feeble uterine contraction; exhaustion	48	Recovered.
25	Sept. 1829	1st stage protracted; labia immensely swollen	74	Died—Gangrene of vagina.
26	Oct. 1829	Induction of labour at 7½ months; distorted pelvis	48	Recovered.
27	Nov. 8, 1829	Distorted pelvis; arm presentation; swollen vagina	20	Died—Laceration of os and cervix [uteri.

28	Nov. 18, 1829	Accidental uterine hemorrhage; rigid os uteri; vomiting; exhaustion	4	Died two hours after delivery.
29	Dec. 5, 1829	1st labour—Distorted pelvis from rickets	40	Recovered—Uterino inflammation.
30	Dec. 27, 1829	Head impacted in brim; exhaustion	48	Recovered.
31	Jan. 17, 1830	Great distortion of pelvis; exhaustion; os uteri half dilated	50	Recovered.
32	Oct. 30, 1830	Distortion of pelvis; labour induced at 7½ months; arm presentation; turning performed with difficulty; head perforated behind the ear	—	Recovered.
33	Dec. 6, 1830	Head compressed in brim; feeble uterine action; vagina swollen and painful	72	Recovered—Vesico-vaginal fistula.
34	Feb. 17, 1831	Slight distortion; impaction of head; delirium; labour-pains gone	Many	Recovered.
35	March 6, 1831	Tumefaction of labia and vagina; cessation of uterine action	72	Recovered—Sloughing of vagina.
36	March 27, 1831	Exhaustion; inflammation and tumefaction of vagina	72	Recovered—Sloughing and cicatrix.
37	March, 1831	Impaction of head twelve hours; abdomen tender; despondency; restlessness	48	Recovered.
38	April 16, 1831	Impaction of head in brim; exhaustion; perforation in a previous labour	24	Recovered.
39	Dec. 1831	Severe fits; cessation of pains; head above brim	—	Recovered.
40	Oct. 1831	Deformed pelvis; nates presentation; head impacted	—	Recovered.
41	March 15, 1832	1st labour—Exhaustion; distorted pelvis	50	Recovered.
42	April, 1832	Os uteri rigid; head impacted in brim; distortion; ergot given	60	Recovered.
43	May 9, 1832	Convulsions and unconsciousness for several hours	48	Recovered.
44	July 11, 1832	Distorted pelvis, in the highest degree, from malacosteon	30	Recovered.
45	Sept. 18, 1832	Distortion from rickets in infancy; rigidity; pulse rapid	36	Recovered.
46	Sept. 13, 1832	1st labour—Great distortion of pelvis; extraction difficult	36	Recovered.
47	Sept. 14, 1832	Valvular disease of heart; dyspnœa increased by labour; danger of immediate asphyxia	—	Recovered.
48	Oct. 5, 1832	Highly distorted pelvis; induction of premature labour at 7½ months; nates presentation	72	Died—Uterine phlebitis.
49	—— 1832	Head wedged in brim; bladder enormously distended; vagina hot and swollen	—	Died—Inflammation of bladder.
50	April 11, 1833	Impaction of head	30	Recovered.
51	March 30, 1833	Head, left arm, and funis without pulsation	12	Recovered.
52	July, 1833	Distortion of pelvis; shoulders jammed in brim; head nearly separated from trunk	48	Recovered.
53	July 5, 1833	1st labour—Head above brim; great prostration; incoherence	64	Recovered.
54	July 5, 1833	1st labour—No progress for twenty-four hours; delirium	—	Recovered.
55	July 5, 1833	1st labour—Delirium; convulsions	24	Recovered.
56	Nov. 10, 1833	Exhaustion from being allowed to remain too long in labour; abdomen painful; vagina swollen	72	Recovered.
57	Nov. 11, 1833	1st labour—Small pelvis; child large; rigidity	46	Recovered.
58	Dec. 1833	1st labour—Violent convulsions; exhaustion	16	Recovered.
59	Dec. 31, 1833	Incoherence; cessation of pains; swelling of soft parts	72	Recovered.

60	Dec. 31, 1833	2d labour—Spontaneous rupture of uterus; vomiting; distortion	15	Died.
61	May 23,1834	Pelvis small; head impacted; convulsions	12or 15	Recovered.
62	Aug. 1834	Impaction of head; vomiting; exhaustion; distended bladder	—	Died.
63	Dec. 27, 1834	Nates presentation; difficulty in extracting head	—	Recovered.
64	—— 1834	1st labour—Hydrocephalus of fœtus	60	Died—Uterine inflammation.
65	March 2, 1835	Convulsions at eighth month	6 or 8	Recovered.
66	April 14, 1835	Great distortion of pelvis in a dwarf at Chelsea	—	Recovered.
67	May 10, 1835	1st labour—Head and soft parts swollen; cessation of pains	50	Recovered.
68	June 23, 1835	Impaction of head; retention of urine; swelling of vagina	48	Recovered.
69	July 8 ,1835	1st labour—Distorted pelvis from rickets	60	Recovered.
70	Dec. 6, 1835	2d labour—Head and arm impacted in pelvis; cicatrix of vagina	30	Recovered.
71	Jan. 19, 1836	Distortion of pelvis; induction of premature labour; nates presentation	144	Died—Ruptured uterus.
72	Aug. 30, 1836	Great distortion of pelvis from rickets	—	Recovered.
73	Sept. 21, 1836	Impaction of head	46	Recovered.
74	Dec. 3, 1836	Impaction of head; delirium; abdomen tender	120	Recovered.
75	Feb. 8, 1837	Severe convulsions in eighth month of pregnancy	—	Recovered.
76	May 8, 1837	Partial placental presentation; hemorrhage; prolapsus of cord	24	Recovered.
77	Aug. 15, 1837	Puerperal convulsions	—	Recovered.
78	Aug. 15, 1837	Face presentation; much swelling; pains feeble	—	Recovered.
79	Aug. 24, 1837	1st labour—Threatened rupture of uterus; great exhaustion	21	Recovered—Ruptured perineum.
80	Oct. 1, 1837	Distortion of pelvis from rickets	—	Recovered.
81	Jan. 19, 1838	1st labour—Distortion of pelvis from rickets; induction of premature labour at seventh month	48	Recovered.
82	March 9, 1838	1st labour—Exhaustion and vomiting	144	Recovered.
83	April 20, 1838	1st labour—Exhaustion	—	Recovered.
84	June 2, 1838	1st labour—Head impacted; pains feeble	84	Recovered.
85	Aug. 11, 1838	1st labour—Impaction of head	53	Recovered.
86	Dec. 13, 1838	Nates presentation; head arrested in brim	—	Recovered.
87	Feb. 16, 1839	1st labour—Puerperal convulsions	—	Died in convulsions.
88	June 22, 1839	Hemorrhage from detachment of placenta	—	Died.
89	July 8, 1839	1st labour—Complete exhaustion; os uteri thick and rigid	50	Recovered.
90	July 9, 1839	1st labour—Impaction of head; exhaustion	36	Recovered—Inflammation and retention of urine.
91	July 26, 1839	Distorted pelvis; cicatrix. of vagina	24	Recovered.
92	July 22, 1839	Exhaustion	30	Recovered.
93	Summer, 1839	Large tumour in pelvis, pressed down before the presenting part; forceps	36	Recovered.

94	Sept. 2, 1839	Arm presentation; rigid os uteri; head left in uterus	48	Died.
95	Oct. 23, 1839	1st labour—Head swollen, and firmly impacted in brim of pelvis	72	Recovered—Vesico-vaginal fistula.
96	Jan. 13, 1840	Slight distortion of pelvis; face presentation; head impacted in brim; right labium immensely distended, burst, and great hemorrhage	Many	Recovered.
97	Feb. 1, 1840	1st labour—Exhaustion; fever	52	Recovered.
98	April 14, 1840	1st labour—Head compressed in brim; rigid os uteri; exhaustion; fever	72	Recovered.
99	May 1, 1840	Malignant disease of os and cervix uteri	24	Died—Ruptured uterus.
100	July 7, 1840	Head firmly fixed in pelvis; exhaustion	48	Recovered.
101	Dec. 31, 1840	1st labour—Exhaustion	40	Recovered.
102	Jan. 12, 1841	Head impacted in brim of pelvis; vagina swelled, and an offensive discharge from it	94	Recovered.
103	Feb. 11, 1841	1st labour—Head impacted; great tumour of scalp; exhaustion	38	Recovered.
104	April 1, 1841	Head, hand, and funis presentation; delirium	48	Recovered.
105	May 3, 1841	1st labour—Impaction of head; peculiar nervous irritability; exhaustion and delirium	34	Recovered.
106	June 13, 1841	Head and right arm presenting; would not allow the child to be turned	—	Recovered.
107	Sept. 14, 1841	Head swollen and fixed in brim of pelvis; delirium	72	Recovered.
108	Oct. 14, 1841	Distorted pelvis; incoherence	92	Died.
109	Oct. 30, 1841	Head impacted in brim of pelvis; exhaustion	35	Recovered.
110	Dec. 12, 1841	1st labour—Brim and outlet of pelvis distorted; threatened rupture of uterus	48	Recovered.
111	Jan. 8, 1842	Rigidity; nates presentation; head impacted; child dead	—	Recovered.
112	Feb. 12, 1842	1st labour—Distortion of pelvis from rickets	72	Recovered.
113	June 4, 1842	Exhaustion; thickening of vagina	96	Recovered.
114	June 18, 1842	Hydrocephalus of fœtus; rupture of uterus	72	Died.
115	June 20, 1842	Hydrocephalus of fœtus; rupture of uterus	22	Died.
116	July 15, 1842	1st labour—Impaction of head; swelling of scalp; exhaustion	60	Recovered.
117	—— 1838	Distorted brim of pelvis; impacted head; swollen vagina; forceps used	48	Died.
118	—— 1830	1st labour—Pelvis small; head impacted in brim; parts rigid	48	Recovered.
119	—— 1836	Violent puerperal convulsions; not relieved by venesection	—	Recovered.
120	—— 1839	Head impacted in brim; soft parts enormously swollen; delirium	—	Recovered.—Sloughing of vagina.
121	Feb. 4, 1843	Impaction; great exhaustion	24	Died.
122	Feb. 13, 1843	Uterine action suspended through terror; delirium; V.S.; os uteri undilated	24	Recovered.
123	April 12, 1843	Great distortion of pelvis; 2d labour; 1st child delivered by craniotomy	70	Recovered.
124	May 6, 1843	Great distortion; nates presentation; head perforated behind	30	Recovered.
125	May 31, 1843	Small pelvis; impaction; retention of urine	60	Recovered.
126	May, 1843	Impaction; child dead; vagina swollen and inflamed	60	Recovered.
127	June 1, 1843	Great distortion; has had four dead children, and very protracted labours	24	Recovered.

LECTURE XXX.

ON THE CAUSES, SYMPTOMS, AND TREATMENT OF PRETERNATURAL LABOURS.

In preternatural labours, which form the third class of Smellie and Denman, the head of the child does not present as in natural labours, but the nates and inferior extremities, or one of the shoulders and arms. Cases of prolapsus of the umbilical cord, and twins, may be included in the same class. It is very difficult, or impossible, to explain why the head of the child does not invariably present in labour; or assign a cause for the same women having preternatural presentations in several successive labours, the head of the child being rarely if ever in them the presenting part. Violence inflicted on the mother during pregnancy will not explain their occurrence once or oftener in the same individuals, for they take place where there has been no shock sustained during gestation, and they are seldom met with after the most severe accidents experienced during pregnancy. That they are not the result of accident is proved by the fact that in some women the same shoulder and superior extremity has presented in different labours, and the children have certainly been placed transversely in the uterus before the commencement of labour.

On July 31st, 1836, I attended a lady in labour, in whom the left superior extremity of the child presented, and the operation of turning was required: I was informed that in both her previous labours the left superior extremity had presented at the beginning of the labour; the situation of the child was the same, and it was alive in all the three labours at the commencement; yet she had been exposed to no shock or accident of any kind during pregnancy. Another patient had eight preternatural labours in succession. The arm presented in the first four or five, and the nates and inferior extremities in all the others. A woman was delivered twice at the British Lying-in Hospital in three years, and in both labours the right shoulder and arm presented. In a woman with distorted pelvis the inferior extremities presented in the first and third labours, and an arm in the fourth. Another, who has been delivered five times, had presentations of the nates and inferior extremities in four labours, the first only being natural. It is highly probable that some cases of preternatural presentation may arise from twisting of the umbilical cord around the neck, trunk, or extremities of the fœtus. Of the sixty cases of arm presentation related in my Clinical Reports, there was prolapsus of the funis in fifteen. The death of the fœtus in utero is, I believe, a more common cause of preternatural labour than twisting of the cord around the child. Of thirty cases of arm presentation related by Dr. Denman, in which spontaneous evolution took place, or the children were expelled double, only one was born alive, and the greater number were premature, and probably dead before the labour commenced. "One hundred and twenty-seven cases of presentation of the feet occurred in the Dublin Lying-in Hospital during the mastership of Dr. Collins, not including those met with in twins. Sixty-two of the 127 children were still-born; forty of which were *putrid*. Thirty-six of the 127 were premature, viz., four at the fifth month; seven at the eighth month; twenty-eight of the premature children were *putrid*; four were dead, but not putrid, and four were born living."

Mauriceau states that when the fœtus is dead the labour is almost always protracted and difficult, and the reason he assigns for this is probably correct: "à cause que son corps n'ayant plus de soutien, et étant devenu tout mollasse, ses parties s'affoissent tout en un tas les unes sur les autres: ce qui fait qu'il vient aussi pour l'ordinaire en mauvaise situation, ou quoiqu'il se présente par la tête en figure naturelle: les douleurs de la femme sont si foible et si lentes en cette occasion, qu'elles ne le peuvent pas faire expulsion." But there are other and more obscure causes of preternatural presentations than the death of the fœtus and twisting of the cord around the trunk and extremities, of which we at present know as little as Dr. Denman did when he wrote the following passage in 1795. "It seems doubtful, therefore, whether we ought not to exclude accidents as the common causes of these presentations, and search for the real cause from some more intricate circumstance; such as the manner after which the ovum may pass out of the ovarium into the uterus; some peculiarity in the form of the cavity of the uterus or abdomen; in the quantity of the waters of the ovum at some certain time of pregnancy; or, perhaps, in the insertion of the funis into the abdomen of the child, which is not in all cases confined to one precise part, but admits of considerable variety."

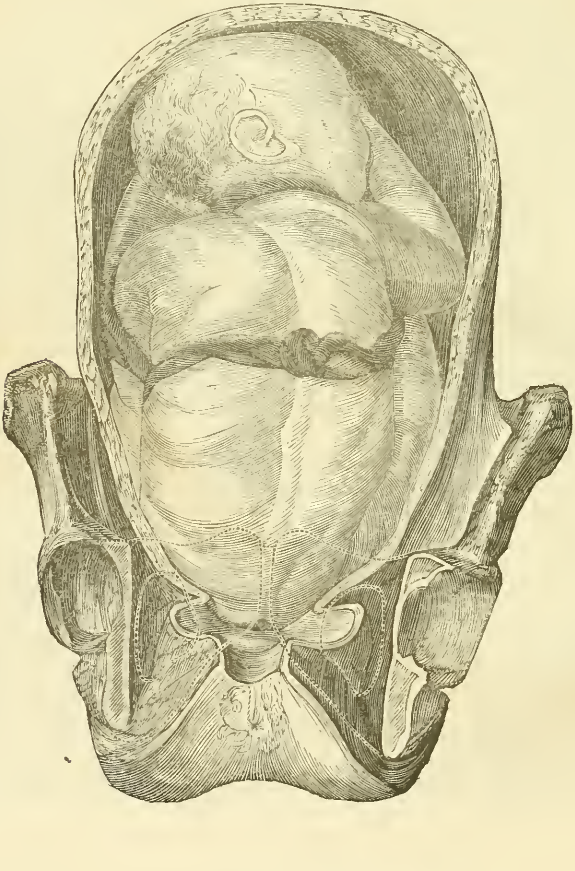
Women often suspect during the latter months of pregnancy that the child is not in the natural position, and that when labour comes on it will be a cross birth, when their fears are unfounded. But they are not always mistaken, for some who have before had natural labours have been firmly persuaded, from something unusual in the form of the abdomen, that the child was unfavourably situated, and their suspicions have been confirmed by the result of the labour. In the greater number, however, it is only after the labour has commenced and made some progress that we ascertain that some other part than the head presents. In preternatural presentations, particularly when the extremities present, the membranes are either ruptured at the commencement of labour or soon after, or they have a peculiar conical pointed shape, not the ordinary globular form, and protrude far into the vagina. Sometimes, before the os uteri is much dilated, the membranes, filled with liquor amnii, pass into the upper part of the vagina, and form a considerable sac with a narrow neck. The presenting part either cannot be felt, or it is lighter, and when touched gives less resistance, than the head usually does, and is less smooth, hard, and regular. A hand, or a foot, or the umbilical cord, may sometimes be distinctly felt through the membranes, but more frequently the membranes burst as soon as the dilatation of the os uteri commences, and the first thing we touch on making an examination is an extremity in the vagina, or perhaps protruding through the external parts. The spontaneous and premature rupture of the membranes, or something peculiar in their shape — the presenting part lying so high up within the os uteri, after it is considerably dilated, that it cannot be felt by an ordinary examination — the presenting part, if felt, being more moveable, less smooth, and globular, and resisting, than the head, are the chief circumstances which should induce you to suspect that the presentation is preternatural, and make you, by all means in your power, preserve the membranes entire, and prevent the escape of the liquor amnii until the uterus is so much dilated, or is so dilatable, that the operation of turning, if necessary, may be performed. As soon as we are certain that the head does not present, it is right to state the fact to the nurse, if not to the relatives of the patient.

Before the membranes are ruptured, it is difficult in some cases to determine positively whether the head presents, or the nates; and it is not unusual for those who have been some years in practice, and who are not afraid of committing mistakes, to make a hasty examination, and to believe and state that it is a natural labour, but afterwards discover, to their mortification, that the nates present. If you touch one of the nates through the membranes, you will feel that it is round, like the head, but much softer, and that there is no suture nor margins of the parietal bones to be felt, however carefully you endeavour to make out the presentation. After the most careful investigation, if you remain in doubt about the case, whether the head presents or the nates — if you are certain that it is not the shoulder — there is no ground for anxiety; the only circumstances requiring attention are, that the membranes should not be ruptured artificially, and that you should not state to the nurse and patient that all is going on favourably before you are positively certain of the fact. After the membranes give way, you will readily ascertain that the nates present by the cleft between the buttocks, the anus and external parts of generation, and the escape of the meconium. The shoulder is much more pointed than one of the nates, and if you can pass the finger carefully around all the parts within your reach, where a shoulder presents you will not fail to distinguish it by feeling the ribs and the scapula. The parietes of the thorax communicate a peculiar sensation, which you cannot fail to recognise. The hand is much flatter and broader than the foot, the fingers are much longer than the toes, and they differ from one another in length much more than the toes do, and are more separated from each other; and their extremities are uneven. The middle finger is the longest, and the thumb the shortest part, and it is at a distance from the fingers. The foot is thicker and heavier than the hand, the great toe is the most prominent part, and near to the other toes; the toes are shorter than the fingers, their ends form nearly an even line, descending from the great toe. But the heel projects in a remarkable manner, and it is by feeling the heel that you will never fail to distinguish the foot from the hand in the uterus: you may forget all these distinctions between the fingers and toes during the operation of turning, but if you will take the trouble once to examine attentively the heel of a new-born child, you will never bring down an arm into the vagina instead of a leg, as I have seen done.

TREATMENT OF PRESENTATIONS OF THE NATES AND INFERIOR EXTREMITIES.

If the nates present to the centre of the brim of the pelvis, the abdomen of the child may correspond with the spine or abdomen

Fig. 61.



of the mother; it may be directed backward or forward, or the back of the child may be directed to either side of the mother. Some of these positions are more favourable than others; that which is most so is represented in the figure on opposite page (Fig. 61), from Smellie's plates, in which the fore parts of the child are to the posterior part of the uterus; and the funis, with a knot upon it, surrounds the neck, arm, and body. "I have sometimes felt," he says, "in these cases, when labour was begun, and before the breech was advanced into the pelvis, one hip at the sacrum, the other resting above the os pubis, and the private parts to one side; but before they could advance lower, the nates were turned to the sides and wide part of the brim of the pelvis, with the private parts to the sacrum, as in Fig. 61; though sometimes to the sacrum, as in Fig. 62. As soon as the breech advances to the lower part of the basin, the hips again return to their former position, viz., one hip turned out below the os pubis, and the other at the back parts of the os externum.

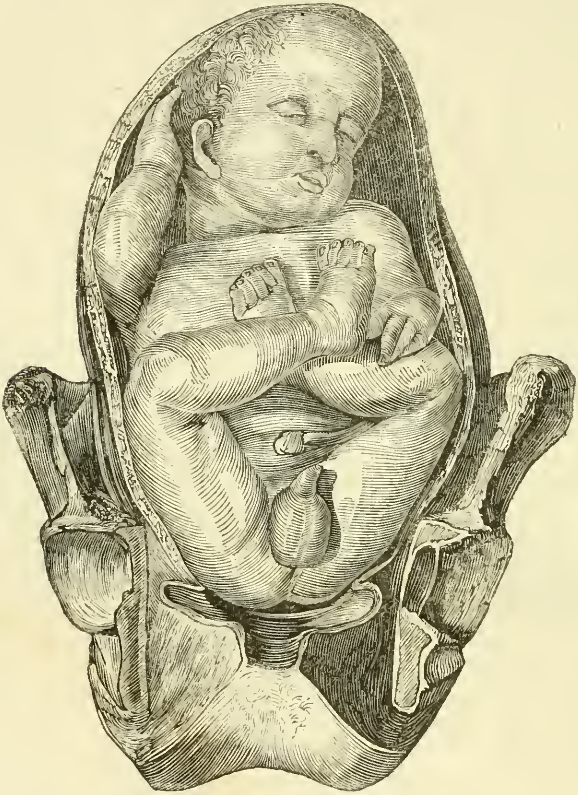
In this case, the child, if not very large, or the pelvis narrow, may be often delivered alive by the labour pains; but if detained long at the inferior part of the pelvis, the long pressure of the funis may obstruct the circulation. In most cases, adds Smellie, where the breech presents, the effect of the labour pains ought to be waited for till at least they have fully dilated the os externum and vagina, if the same have not been stretched before with the waters and membranes. In the meantime, whilst the breech advances, the os externum may be dilated gently during every pain, to allow room for introducing a finger or two of each hand to the outside of each groin of the fœtus, in order to assist the delivery when the nates are advanced to the lower part of the vagina. But if the fœtus is larger than usual, or the pelvis narrow, and after a long time and many repeated pains, the breech is not forced down into the pelvis, the patient's strength at the same time failing, the operator must, in a gradual manner, open the parts, and, having introduced a finger into the vagina, raise or push up the breech of the fœtus, and bring down the legs and thighs. If the uterus is so strongly contracted that the legs cannot be got down, the largest end of the blunt hook is to be introduced, and cautiously drawn down with it. As soon as the breech or legs are brought down, the body and head are to be delivered, as described in the next table, only there is no necessity here to alter the position of the child's body.

The figure at page 324, also from Smellie's plates, shows, as he states, in the same view as the former figure, the breech of the fœtus presenting: with this difference, however, that the fore parts of the child are to the fore part of the uterus. In this case when the breech, coming down double as it presents, is brought down to the hams, the legs must be extracted, a cloth wrapped round them, and the fore parts of the child turned to the back part of the woman. If a pain should in the meantime force down the body of the child, it ought to be pushed up again in turning, as it turns easier when the belly is in the pelvis than when the breast and shoulders are engaged; and as sometimes the face and forehead are rather towards one of the groins, a quarter turn more brings these parts to the side of the pelvis and a little backwards, after which the body is to be brought down. If the child is not large, the arms need not be brought down, and the head may be delivered by pressing back the shoulders and body of the child to the perineum, and whilst the chin and face are within the vagina, to bring the occiput out from below the pubes, according to Daventer's method. Or the operator may introduce a finger or two into the mouth, or on each side of the nose, and, supporting the body on the same arm, fix two fingers of the other hand over the shoulders, on each side of the child's neck; and in this manner raise the body over the pubes, and bring the face and forehead out with a semicircular turn upwards from the under part of the os externum. All this may be easily done when the woman lies on her side; but if the child is large and the pelvis narrow, it is better to turn the patient on her back, and after the legs and body are extracted as far as the shoulders, the arms are to be cautiously brought down, and the head delivered. If the woman has strong pains, and when, by the felt pulsation of the funis umbilicalis, or the struggling motion of the fœtus, it is certain that the child is still alive, wait with patience for the assistance of the labour; but, if that and the hand are insufficient, and the pulsation of the funis turns weaker, and if the child cannot be brought double, the breech must be pushed up; and if the resistance of the uterus is so great as to prevent the extraction of the legs, the patient ought to be turned on her knees and elbows. When the legs are thus brought down, the woman, if needful, is to be again turned to her back, to allow more freedom to deliver the body and head, as before described. If the head, after severe trials, cannot be delivered without endangering the child, from overstraining the neck, the long curved forceps ought to be applied. If these fail, and the patient is not in danger, some time may be allowed for the effect of the labour pains; which likewise proving insufficient, the crotchet may be used, when it is certain that the child is dead, or that there is no possibility of saving it.

The treatment adopted in cases of nates presentation by Dr. Burton, a contemporary of Smellie, was still more artificial and objectionable; for as soon as he discovered that the nates presented, he was accustomed to thrust up against the buttocks with all his strength, and to endeavour to turn the child with its belly towards the os uteri, and then search for the feet. "Were this rough and barbarous recommendation of Burton generally followed," observes Dr. Merriman, "the most lamentable consequences, both to mother and child, could not fail of being often experienced. Smellie was too fond of this pushing up; indeed it was the doctrine of the day; and Dr. Hunter, in the early part of his practice, used to follow the same plan in breech presentations; but, from a conviction of its impropriety, he afterwards discontinued it." At this time I lost the child in almost all the breech cases," says Dr. Hunter, "but since I have left these cases to nature, I always succeed." Portal, who first described the best method of treating face presentations, was probably also the first who discovered that cases of nates presentation might often be left to the natural efforts, and that they did not require the operation of turning upon the head, or that attempts should be made to bring down the feet. "In such a case as this," he says, "you must not be impatient, for though the labour proceeds very slowly, yet it is not much more difficult than a natural birth; whence it is that our midwives say, by way of proverb, that where the buttocks can pass, the head will follow of course. The position of the child in this case is doubled, with his thighs upon the belly, and the passage being once open for the buttocks by the reiterated pains, the head follows without much trouble."

Having ascertained that the nates present, whatever the position of the fœtus may be, whether the abdomen look backward or forward, we cannot alter it with safety, and no change can be required to be made till the nates and lower extremities are expelled. The os uteri dilates slowly in most cases of nates presentation, but we cannot employ any means with advantage to accelerate the delivery, and in most cases, if we do not interfere, but wait patiently, they are gradually pressed lower and lower into the pelvis, and at last escape from the vagina without any assistance. If the os uteri and vagina are imperfectly dilated, and the nates are drawn down or pass rapidly through the pelvis, the child is often lost. The membranes should not be ruptured, and the expulsion of the nates should be left entirely to the natural efforts, unless the labour is protracted and exhaustion takes place. Except supporting the perineum, nothing is required in a great proportion of these cases before the nates and lower extremities have been expelled, when it becomes necessary to ascertain precisely the relative position of the child to the pelvis, to rectify this if it is unfavourable, and artificially extract the superior extremities and head, to prevent the fatal compression of the umbilical cord. If we find, after the expulsion of the nates and lower extremities, that the toes are directed forward, or that the child is in the position represented in the second figure, with its abdomen applied to the anterior part of the uterus, and that its back lies along the spine of the mother, we should wrap the nates and sides in a soft napkin, and turn the child very gently round during a pain, observing to which side the feet are inclined to turn, till its abdomen is to the spine of the mother, and the toes are directed backward to the hollow of the sacrum, or to the side of the pelvis. In many cases the nates turn round in the passage spontaneously, so that it is not required artificially to alter the position. It is necessary always to recollect that it is possible to turn the body of the child round without turning the face round into the hollow of the sacrum, and that the chin may be over the symphysis pubis when the front of the chest and abdomen are turned backward. After the lower extremities and body of the child have been expelled, and placed in the most favourable position for the extraction of the superior extremities and head, it is necessary to proceed without loss of time to draw these through the pelvis, that the child may not be destroyed by compression of the umbilical cord. As pressure upon the cord for a very short time will in some cases kill the child, it is proper to watch closely the pulsations of its arteries. Draw the body of the child forward as far as the arm-pits, and place it over the palm of your right hand and fore-arm, and gently draw the body towards the left thigh of the mother; then pass the fore and middle fingers of your left hand along the back part of the left arm of the child to the elbow-joint, and press down the arm with your fingers along the thorax

Fig. 62.



of the child, and extract it. Then transfer the body of the child and left arm to your left hand and fore-arm for support, and with the fore and middle fingers of your right hand disengage and bring down, in the same way, the right arm of the child; then pass the fore and middle fingers of your left hand into the mouth of the child, or rather over the lower and upper jaw, and at the same time place the fore and middle fingers of your right hand over the back part of the neck and occiput, and with the fingers of the two hands thus applied extract the head, in the line of the axis of the pelvis. The perineum is very rigid in some cases of nates presentation, where it is the first child, and it will be torn if the head is extracted hastily, and not drawn forward to the symphysis pubis. When you feel the pulsations of the cord beginning to cease, you may be tempted to employ greater extracting force than the neck of the child and perineum can bear, and both may be destroyed. The only method of obviating this is to press back the edge of the perineum, that the air may gain admission into the mouth of the child, and the respiration go on, when the circulation in the cord has been arrested, until the perineum is sufficiently dilated to slide back over the face, and allow the head to pass. I have seen from twenty minutes to half an hour elapse in some cases, after the cord had ceased to pulsate, before the perineum would allow the head to escape, during which time the respiration was regularly performed. This is not a new practice; it has been alluded to by some of the older accoucheurs, and some others; and the advantages to be derived from it were fully pointed out some years ago by Dr. Bigelow, in a paper published in the American Journal of the Medical Sciences, "On the Means of affording Respiration to Children in Reversed Presentations." The object of Dr. Bigelow in this paper is to show that in many cases the life of the child may be saved by forming a communication between the mouth and atmosphere previous to the delivery of the head. If the head be low down, the fingers alone can give the necessary assistance; but if it is high in the pelvis, and is reached with difficulty, the assistance of a tube may be necessary. He recommends a flat tube, which is to be guarded, and kept within the fingers of the inserted hand.

Where the pelvis of the mother is small or distorted, and the child large and unfavourably situated, the efforts of nature may be insufficient to expel the child, either alive or dead. The nates may become so firmly impacted in the pelvis, that they cannot advance without artificial assistance. A finger should be passed up to one of the groins, and when a pain comes on a considerable extracting force may be exerted with it, without injuring the child; or a soft handkerchief may be passed between the thigh and abdomen, and the nates drawn down; but this cannot be done unless they have descended low into the cavity of the pelvis. Where these means fail, and it is impossible to extract the child alive, the blunt hook or crotchet must be employed. In cases of nates presentation, where the pelvis is distorted, after the extraction of the trunk and extremities, it is necessary to perforate the back part of the head, and complete the delivery with the crotchet. In presentations of the feet and knees the treatment does not essentially differ from that required in presentations of the nates.

LECTURE XXXI.

ON PRETERNATURAL LABOURS—PRESENTATIONS OF THE SHOULDERS AND SUPERIOR EXTREMITIES.

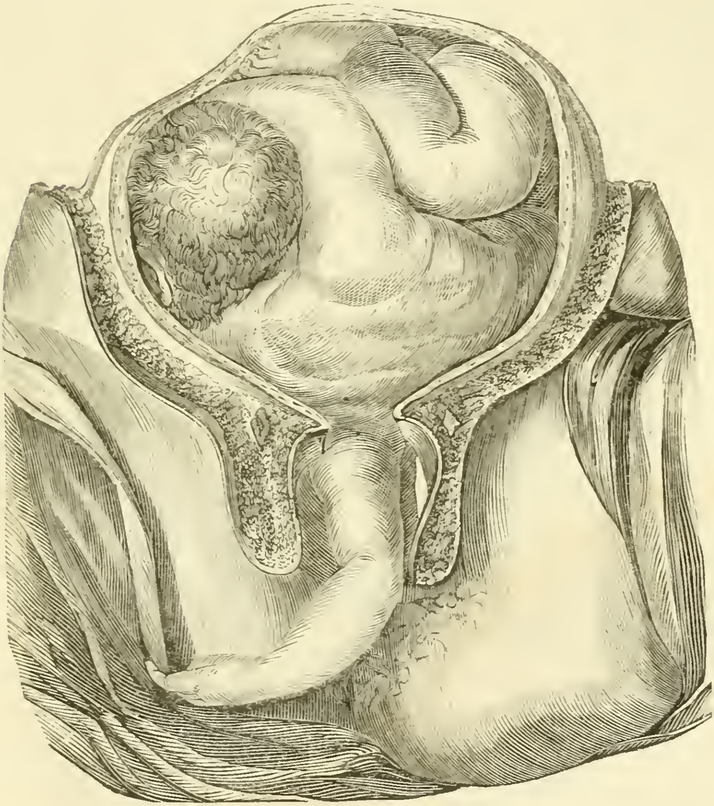
All the varieties of preternatural labours have usually been divided into two orders; the first comprehending presentations of the nates and inferior extremities, and the second those in which the shoulder and superior extremities present. Cases in which the back, abdomen, or sides of the fœtus present, are so rare, that some practitioners believe it to be almost impossible for them ever to happen at the full period.

In 20,517 cases delivered in the Maternité of Paris, Madame Boivin states that no instance of such presentation occurred at the full term of gestation. The representations which have been given by her in the 117th and 118th plates of her "Memorial de l'Art des Accouchmens," of presentations of the abdomen and back, were therefore not made from nature; and I can hardly believe that a fœtus ever lay within the uterus with his heels and occiput in contact, as you see delineated in the last of these figures. Smellie's thirty-third table, which exhibits the fœtus compressed into a round form, the belly or umbilical region presenting at the os internum, and the funis hanging out of the vagina, is probably also to a great degree an imaginary representation. In the extensive practice of Dr. Merriman and his uncle, amounting together to nearly 20,000 labours, no instance occurred of either of these presentations, except in one or two cases where the mother had not completed her seventh month of utero-gestation; and in these the children passed double through the pelvis. Dr. Hunter says, in his MS. Lectures, 1765, "I have read much in authors where the navel is said to present, or, on the contrary, where, on introducing the finger, you feel the middle of the spine. I do not believe there is the possibility of such a thing in nature; the shape of the uterus, pelvis, &c., all deny it." Dr. Denman says, "I do not mention the marks by which the back, belly, or sides might be distinguished, because these, properly speaking, never constitute the presenting part; that is, though they may sometimes be felt, they never advance foremost into the pelvis, in the commencement at least of a labour.

PRESENTATIONS OF THE SHOULDER AND SUPERIOR EXTREMITIES.

In those difficult and dangerous cases of preternatural labour, usually called cross births, the fœtus lies transversely in the uterus, the nates and lower extremities being directed to one ilium, and the head to the other, and the abdomen backward to the spine of the mother, or downward to the os uteri. The thirty-first table of Smellie represents, in a front view of the pelvis, the fœtus compressed by the contraction of the uterus into a round form, the fore parts of the former being towards the inferior part of the latter, and one foot and hand fallen down into the vagina.

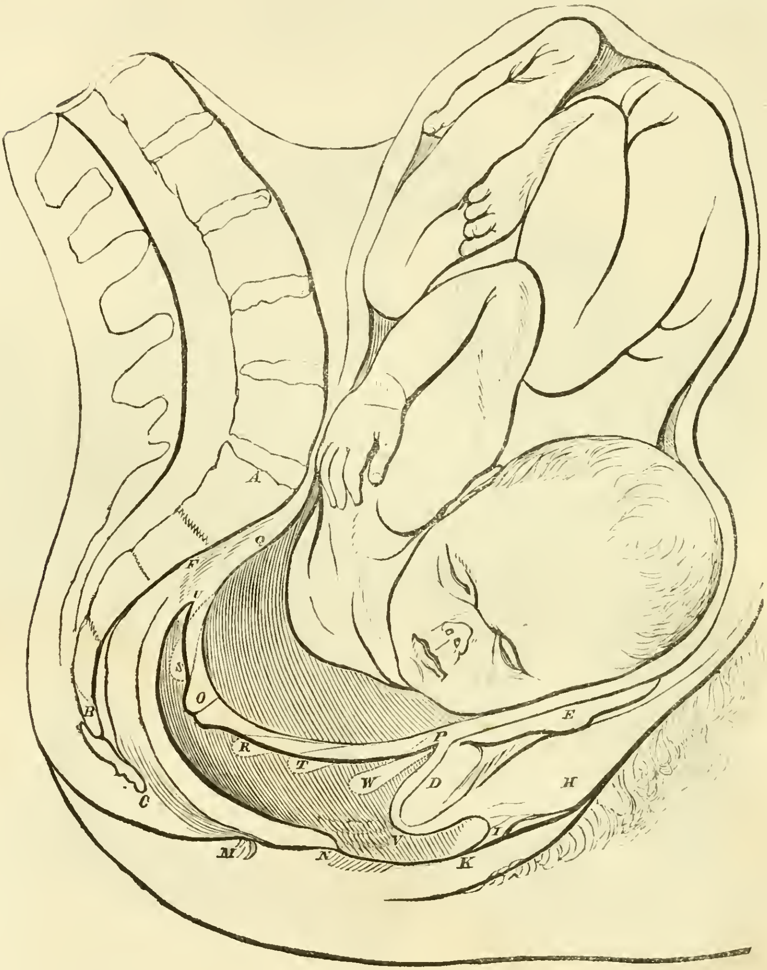
Fig. 63.



The thirty-second table represents, in the same view with the former, the fœtus in the contrary position: the breech and fore parts being towards the fundus uteri, the left arm in the vagina, and forearm without the os externum, the shoulder being likewise forced into the os uteri.

The thirty-fourth table shows, in a lateral view of the pelvis, one of the most difficult preternatural cases, the left shoulders, breast, and neck of the fœtus presenting, the head reflected over the pubes to the right shoulder and back, and the feet and breech stretched up to the fundus; the uterus contracted at the same time, in form of a long sheath, round the body of the fœtus.

Fig. 64.



In some favourable cases of shoulder and arm presentation, the uterus is widely dilated before the membranes are ruptured and the liquor amnii discharged; and no difficulty is experienced in passing the hand into the uterus, laying hold of the feet, and extracting the child by the operation of turning. If the uterus is not contracting strongly and at short intervals, little resistance is offered to the introduction of the hand, and the delivery may be speedily accomplished with safety both to the mother and child. But if the membranes have burst, the liquor amnii escaped, and the uterus has been contracting firmly upon the child many hours before the operation of turning is attempted, the child is often destroyed by the pressure, and the coats of the uterus exposed to great danger from contusion and laceration in passing up the hand and bringing down the feet. The shoulder and thorax become so strongly impacted in the pelvis, that great force is required to introduce the hand into the uterus to grasp the feet, and much exertion necessary before the position of the child can be changed.

In other cases of shoulder and arm presentation, the membranes burst and the liquor amnii escapes at the commencement of labour, and the os uteri is rigid and undilated, so that the hand cannot be passed into the uterus after the labour has continued many hours. The difficulty and danger of these cases are greatly increased when the uterus is contracting with violence, and the pelvis is distorted, or a disproportion exists between the child and pelvis from any other cause. The greater number of women, if abandoned to the efforts of nature under these circumstances — the uterus having no power to alter the position of the fœtus — would ultimately die undelivered, from exhaustion or rupture of the uterus and vagina. Where the pelvis is large, the fœtus premature and dead, and the uterine action strong, the child, it is true, has sometimes, where no artificial assistance is afforded, been expelled double, or what has been called by Dr. Denman spontaneous evolution of the child has taken place. The arm here descends, and the shoulder and thorax are forced lower and lower into the pelvis, and gradually advance by the pains till they escape through the outlet, and the head and other parts soon follow. This expulsion of the fœtus double was observed by Puzos, and the proper treatment recommended where it was about to take place. He says, "Si l'enfant plié en deux se précipité dans l'orifice et qu'il s'engage aussitôt les eaux percées, les douleurs continuant de porter en bas, il vaut mieux laisser venir l'enfant dans cette situation, que de faire violence à la matrice pour aller chercher les pieds; l'enfant ne périt pas pour vénir de cette façon : il n'ouvre pas non plus une femme au-delà de l'ordinaire : puisque souvent après les fesses sorties avec les cuisses repliées sur le ventre, la tête a encore peine à franchie ce detroit : quand l'enfant plié en deux à les fesses au passage, il faut le tournée alors le ventre en dessous, mettant les doigts de chaque main dans ses aines, ce qui s'exécute fort aisément, et le degagement de ses pieds ne donne pas plus de peine." Dr. Denman observed a considerable number of cases of shoulder and arm presentation in which the child was expelled double, and he gave the following account of the process. "As to the manner in which this evolution takes place, I presume that after the long-continued action of the uterus, the body of the child is brought into such a compacted state as to receive the full force of every returning action. The body, in its doubled state, being too large to pass through the pelvis, and the uterus pressing upon its inferior extremities, which are the only parts capable of being moved, they are forced gradually lower, till the body, turning as it were upon its own axis, the breech of the child is expelled, as in an original presentation of that part."

Since the publication of Dr. Douglas's essay in 1811, entitled, an 'Explanation of the real Process of the Spontaneous Evolution of the Fœtus," it has been almost universally admitted that, in these cases, the arm and shoulder do not recede; that the child does not turn upon its axis; and that the nates are not expelled as in an original presentation of that part. The arm, shoulder, and thorax, are first expelled, and the nates and head afterwards. As the term spontaneous evolution is still in common use, and is calculated to convey an erroneous idea of what does actually take place in these cases of preternatural labour, I shall read to you what Dr. Douglas, who first gave a correct explanation of the fact, states on the subject:—"So far as the foregoing detail, my observations coincide with those of Dr. Denman and others; but I cannot comprehend how successive repetitions of the same propelling power which forced the child into this situation should subsequently, at any period, produce a counter effect, causing the shoulder to retreat into the uterus. The fact, however, is, that the shoulder and thorax, thus low and impacted, instead of receding into the uterus, are at each successive pain forced still lower, until the ribs of that side corresponding with the protruded arm press on the perineum, and cause it to assume the same form as it would by the pressure of the forehead in a natural labour. At this period not only the entire of the arm, but the shoulder, can be perceived externally, with the clavicle, lying under the arch of the pubis. By further uterine contractions the ribs are forced more forward, appearing at the os externum as the vertex would in a natural labour; the clavicle having been, by degrees, forced round on the anterior part of the pubis, with the acromion looking towards the mons veneris. But in order to render as clear as possible the successive movements in this astonishing effort of nature, I will endeavour to describe still more precisely the situation of the fœtus immediately prior to its expulsion. The entire of it somewhat resembles the larger segment of a circle; the head rests on the pubis internally; the clavicle presses against the pubis externally, with the acromion stretching towards the mons veneris; the arm and shoulder are entirely protruded, with one side of the thorax not only appearing at the os externum, but partly without it; the lower part of the same side of the trunk presses on the perineum, with the breech either in the hollow of the sacrum, or at the brim of the pelvis, ready to descend into it; and, by a few further uterine efforts, the remainder of the trunk, with the lower extremities, is expelled. And, to be still more minutely explanatory in this ultimate stage of the process, I have to state that the breech is not expelled exactly sideways, as the upper part of the trunk had previously been; for, during the presence of that pain by which the evolution is completed, there is a twist made, about the centre of the curve, at the lumbar vertebræ, when both buttocks, instead of the side of one of them, are thrown against the perineum, distending it very much, and immediately after the breech, with the lower extremities, issues forth; the upper and back part of it appearing first, as if the back of the child had originally formed the convex, and its front the concave side of the curve."

There is now a premature acephalous fœtus upon the table before you, the left arm and shoulder of which presented in labour a few days ago, and the body passed through the pelvis double, in the manner here described; or spontaneous evolution took place. I have repeatedly witnessed the same occurrence where the fœtus was premature, and flaccid from putrefaction; and on the 14th of August, 1831, I saw a child at the full period expelled in this manner, in a woman who obstinately refused to allow the operation of turning to be performed. The right shoulder and arm presented in that case; and after the labour had continued three days and nights, the child was at last forced through the pelvis doubled up, in a putrid state, the head being flattened, and the viscera of the abdomen pressed through the parietes. It is only in a few rare cases, however, that the delivery is completed in this manner —where an unusual combination of circumstances exists; and it would be improper to calculate upon the occurrence of spontaneous evolution, or allow the possibility of its taking place to influence the treatment we adopt in cases of arm presentation. It does not occur in cases where the operation of turning is performed with difficulty, and it is not a resource to which, in practice, we ought ever to trust; it ought never to be considered as a substitute for turning. It is now a general rule, established in all countries where midwifery is understood, that in cases of preternatural labour, where the shoulder and superior extremities of the child present, the operation of turning ought to be performed. But the hand must not be forced into the uterus, if the orifice is rigid and undilatable; it should be dilated nearly to the size of half-a-crown piece or more, or the margin ought to be very thin, soft, and yielding, if it is expanded to a smaller extent than this when turning is attempted. If the os uteri will not admit the extremities of the fingers and thumb in a conical form to be introduced without much force, if it is thick, hard, and unyielding, some delay is necessary, that the parts may relax, death being almost always the consequence of thrusting the hand with violence through the orifice of the uterus in a rigid and undilatable condition, whether the membranes be ruptured or not. But as soon as it will admit of the safe introduction of the hand, where you have ascertained that an arm presents, no time should be lost in completing the delivery, otherwise the membranes may give way, the liquor amnii be evacuated, and a case of little difficulty and danger be suddenly converted into one equally hazardous to the mother and child. In all cases of labour, where the first stage is far advanced without the nature of the presentation being positively determined, or a superior extremity is felt through the membranes, the patient should be kept in the horizontal position, that they may not be ruptured; and you should remain in constant attendance upon the patient, and be prepared to interfere the instant the necessity arises.

When the operation of turning is required before the membranes are ruptured, and when the orifice of the uterus is widely dilated, and there are long intervals between the pains, it is accompanied with little difficulty and danger. Having explained to the patient and her relatives the nature of the case, let her lie on the left side near the edge of the bed, with the knees drawn up to the abdomen. Sit down by the side of the bed, and quietly take off your coat; lay bare your right arm by turning up the shirt above the elbow, and cover the back of the hand and the whole forearm with cold cream, lard, or a solution of soap. Introduce one finger after another into the vagina, and slowly and effectually dilate its orifice. The hand, in a conical form, and in a state of half supination, must then be pressed steadily forward with a semi-rotatory motion against the perineum and sides of the passage, till it clears the orifice of the vagina. This should always be done very slowly and gently, as it is accompanied with great pain. Let the hand remain some time in the orifice of the vagina, that it may be fully dilated, and offer no resistance in the subsequent steps of the operation of turning. When the hand has dilated the vagina sufficiently, in the absence of pain gently insinuate the points of the fingers and thumb into the os uteri in a conical form; and if it is not sufficiently open to allow the hand to pass, you must proceed next to use artificial dilatation here also, very gently and slowly, always stopping as soon as a pain comes on, but not withdrawing the fingers altogether at the time from the os uteri. Having succeeded in dilating the part without rupturing the membranes, slide the hand up between the membranes and the anterior part of the uterus into the cavity, and grasp the feet when the membranes give way. Most frequently the membranes burst as the hand is entering the uterus, before it reaches the feet, and the liquor amnii rushes out and is lost, if it is not prevented by pressing the hand forward firmly into the orifice. Never be contented with one foot when it is possible to grasp both; and this can always be done when the liquor amnii has not escaped, and the uterus is not closely contracted round the body of the child. Seize both feet and legs, and when there is no pain, draw them down into the vagina; and as the nates descend through the os uteri, the shoulder and arm will gradually recede or be retracted, and will offer no obstacle to the remaining part of the operation, which should be completed as if the nates and inferior extremities had originally presented, and which has already been very fully described. In actual practice, except in twin cases, the membranes have been ruptured and the liquor amnii is gone, in a great proportion of cases — in about ten to one — long before we are called upon to deliver by turning, and the operation is then a much more serious affair. Sometimes, when the os uteri is half dilated, there is an interval of freedom from pain for several hours after the rupture of the membranes, and partial escape of the liquor amnii. Here it is advisable to turn without delay; and the hand can be passed up into the uterus and the feet brought down with little more difficulty than if the membranes had not been ruptured.

The shoulder and arm may present, and the operation of turning be required where the membranes have burst at the commencement of the labour, the liquor amnii has escaped, and the os uteri is rigid, and is not dilated in a sufficient degree to allow the hand to pass. You can learn from experience alone when there is a probability in such cases of artificially dilating the os uteri without the employment of too much force: it is best to wait patiently, in such a state of the os uteri, till relaxation takes place, before attempting to overcome the resistance, and to obviate the danger of spontaneous laceration of the uterus by venesection and opiates.

A much more difficult case of turning than any of those already described, is that in which the liquor amnii has long been evacuated, the uterus has contracted strongly around the body of the child, and the arm, shoulder, and a part of the thorax, have become firmly impacted in the pelvis. No attempt in such a case should ever be made to force back the presenting part into the uterus, but the hand should be cautiously conducted to the feet along the arm of the child, and the shoulder pressed aside. It is impossible in all cases to determine positively the position of the child, and the side of the uterus to which the feet are directed; the hand ought, however, almost invariably to be passed up between the front of the pelvis and the presenting part of the child, however the trunk and extremities may be situated; and as both hands are frequently required in these cases to turn, it is of no importance whether you employ the right or left first. I believe the two most important rules which you ought to remember in the treatment of these cases are, first, to pass up the hand between the anterior and shallow part of the pelvis, and the presenting part of the child; and secondly, when one hand is rendered powerless by the pressure from the contractions of the uterus, to withdraw this hand and replace it by the other. By the observance of these rules there are few cases, I believe, of arm presentation, in which the operation of turning may not be safely accomplished. It is in rigid and irritable states of the uterus that we encounter the greatest resistance to the introduction of the hand: and where these exists in a high degree, recourse should be had to a copious venesection and a large opiate, before the operation is again attempted. Where these means have been vigorously employed, it will rarely be necessary to remove the arm of the child at the shoulder-joint, to perforate the thorax, and draw it through the pelvis with the crotchet doubled up, as in spontaneous evolution.

Seventy-one cases of shoulder and arm presentation have come under my observation since 1823. In a great proportion of these the operation of turning was undertaken in the most unfavourable circumstances, both for the mothers and their children, after the liquor amnii had entirely escaped, and the uterus had not only been contracting for many hours around the child, but repeated unsuccessful efforts had been made to deliver. Seven women died from rupture of the uterus, and three from inflammation of the uterus. Laceration and inflammation of the uterus are therefore the consequences of turning chiefly to be dreaded. Four of these cases of rupture occurred in the practice of other accoucheurs, and three in patients under my own care, and where no great difficulty was experienced, or force employed in turning. The most perplexing cases were those in which there was distortion of the pelvis, with arm presentation; and the most easy and successful, those twin cases in which the superior extremity of the second child presented, and the operation of turning was promptly performed. Edmund Johnson, Esq., has had the kindness to make the following tabular view of the histories of these cases, sixty of which have been recorded in my "Clinical Midwifery."

A TABULAR VIEW

OF

SEVENTY-ONE CASES OF SHOULDER AND ARM PRESENTATIONS.

No.	Date.	Symptoms and Treatment.	Result.
1	Oct. 10, 1823	Arm in vagina; uterus firmly contracting around the child. Repeated attempts by the practitioner to turn; uterus ruptured on left side, either from or before operation; fœtus escaped through rent, afterwards extracted by the hand passed through the cavity and rent in the uterus into the peritoneal sac. None of the ordinary symptoms of ruptured uterus followed	Died 7 days after delivery; adhesions by lymph around rupture, which, when peeled off, exposed the rent; peritonitis.
2	Aug. 1, 1824	Right arm with funis low in the vagina; shoulder and thorax squeezed in brim; liquor amnii escaped. Operation of turning performed with difficulty	Died forty-eight hours after, from peritonitis.
3	Oct. 15, 1824	Right arm, swollen and livid, protruded through the os externum; pelvis distorted; shoulder and thorax wedged in brim; uterus firmly contracted; membranes ruptured four hours. Repeated efforts to turn, without success: thorax perforated; arm separated at shoulder; child dragged through the pelvis, doubled up	Recovered.
4	Feb. 12, 1827	Triplets; arm of first and second child presented. Turned without difficulty; presentation of third natural: all still-born	Recovered.
5	April 9, 1827	Arm presentation; liquor amnii discharged; uterus firmly contracting. Turning difficult: child dead	Died from uterine hemorrhage.
6	May 1, 1827	Left arm presenting, with cord twisted around it; not pulsating; uterus firmly contracted. Frequent attempts to turn, without success: thorax perforated, and child extracted doubled up	Recovered.
7	May 14, 1827	Presentation of left arm; shoulder and thorax fixed low in pelvis; umbilical cord prolapsed, without pulsation; uterine contractions strong and violent, when turning was attempted. Thorax perforated, and child extracted	Recovered.
8	Dec. 3, 1827	Presentation of arm with head. Turning attempted: one foot brought down, and left in vagina a day and a night: distorted pelvis. Labour completed by craniotomy: extraction difficult	Recovered, after severe inflammation of uterus.

No.	Date.	Symptoms and Treatment.	Result.
9	Dec. 18, 1827	Presentation of arm and funis; os uteri partially dilated, and high up; membranes ruptured three hours; cord pulsating. Turning difficult	Recovered.
10	March 25, 1828	Right arm with funis; liquor amnii escaped four hours; slight uterine contraction. Operation of turning performed without difficulty: in extracting head the chin hitched over pubis; child dead.	Recovered.
11	April 20, 1828	Twins; arm of second child; pains not strong. Turning easily performed; one hour between the birth of first and second child; both children alive	Recovered.
12	April 26, 1828	Right arm with funis hanging out of external parts; no pulsation. Turning easily performed: placenta retained; rupture of uterus discovered when placenta was extracted	Died, with delirium and vomiting.
13	June 15, 1828	Left arm with funis; no pulsation; liquor amnii evacuated; strong and violent uterine contractions. Tinct. opii employed; turning easily performed	Recovered.
14	Aug. 19, 1828	Right arm; liquor amnii evacuated; no uterine contractions. Turning accomplished with great ease: child alive	Do.; severe inflammation
15	Sept. 18, 1828	Twins; arm and shoulder of second child protruded through external parts. Operation of turning difficult	Recovered.
16	Dec. 15, 1828	Left arm and thorax pressed deeply in pelvis; liquor amnii discharged; strong uterine contractions. V.S. and opiate used with advantage. Turning at last performed with ease: child dead	Recovered.
17	Jan. 3, 1829	Presentation of arm; rigid os uteri; pains strong and frequent. Thorax perforated; arm separated from trunk. Delivery completed with crotchet	Recovered.
18	Jan. 9, 1829	Right arm protruded through os externum; pains slight. Turning difficult: child dead	Recovered.
19	May 29, 1829	Presentation of left arm, much swollen; os uteri firmly contracted around shoulder; liquor amnii evacuated. V.S. employed with benefit. Turning accomplished with ease: rigors and feeble pulse after operation	Recovered.
20	June 3, 1829	Twins; second child, arm presentation; pains strong. Operation of turning not accomplished: arm and shoulder drawn through the outlet of the pelvis, and child delivered doubled up	Recovered.
21	July 28, 1829	Presentation of right arm; membranes ruptured; os uteri dilated; pains few and feeble. Operation of turning performed with ease	Recovered.
22	Autumn, 1829	Arm with umbilical cord in vagina three days. Would not allow the operation of turning to be tried by an accoucheur. Complete exhaustion. Turning at last effected by a midwife	Recovered.
23	Nov. 8, 1829	Distorted pelvis; presentation of arm. Arm removed by another practitioner, and turning repeatedly attempted: thorax impacted in pelvis. Foot grasped with craniotomy forceps, and turning at last effected: head unable to pass through brim; perforated behind ear. Delivery completed with crotchet	Died; rupture of orifice and neck of uterus.
24	May 22, 1830	Presentation of left arm; membranes ruptured seven days; irregular uterine contractions; shoulder and part of thorax jammed in the brim. Turning impossible to be performed. Arm removed at shoulder; thorax perforated. Delivery accomplished with crochet	Recovered.

25	Aug. 29, 1830	Twins; second child, presentation of arm; membranes entire; uterus in state of rest. First child born four hours previously. Turning easily performed: both children alive	Recovered.
26	Oct. 24, 1830	Left arm descended low in vagina; pains very strong, but intervals long; liquor amnii evacuated. Turning easily effected: child alive	Recovered.
27	Dec. 4, 1830	Arm low down in vagina; membranes ruptured. Great difficulty experienced in turning	Died; rupture of musc. and mucous coats of uterus.
28	June, 1831	Twins; arm presentation of second child; membranes entire. Turning easily performed: child alive	Recovered.
29	Aug. 14, 1831	Presentation of right arm. Would not allow turning to be performed. Three days and nights in labour. Child putrid, forced through pelvis doubled up; head flattened Contents of abdomen pressed through parietes	Recovered.
30	Nov. 3, 1831	Presentation of arm; membranes long ruptured; liquor amnii discharged; uterus firmly contracted around child. Great difficulty in turning: child dead	Recovered.
31	Dec. 1831	Twins; presentation of arm of second child; membranes entire. No time lost in bringing down the feet: child alive	Recovered.
32	Feb. 1, 1833	Twins; presentation of arm of second child; pelvis large; child small. Expelled doubled up: child dead	Recovered.
33	Feb. 13, 1833	Presentation of right arm; membranes ruptured some hours; uterine action suspended. Turning easily accomplished: head arrested in brim. Delivery completed by crotchet	Recovered.
34	Aug. 18, 1833	Presentation of arm. Useless efforts had been long used to push back arm, and allow head to descend. Turning accomplished: child dead	Recovered.
35	Oct. 23, 1833	Twins; arm of second child presented. Turning easily effected: child dead. Delivery followed by dangerous hemorrhage	Recovered.
36	Jan. 2, 1834	Presentation of right arm; membranes just ruptured; shoulder and arm low down. Turning performed with difficulty: child dead	Recovered.
37	July 14, 1834	Distorted pelvis; premature labour induced; presentation of left arm. Turning performed: child dead	Recovered.
38	March 2, 1836	Presentation of left arm and funis, without pulsation; pains feeble; os uteri half dilated, but not rigid. Turning easily performed	Recovered.
39	July 31, 1836	Presentation of shoulder; os uteri high up; membranes entire. Operation of turning performed with ease: child dead	Recovered.
40	Aug. 2, 1836	Presentation of left arm and large portion of funis; liquor amnii gone; os uteri dilated; pains feeble	Recovered.
41	Aug. 4, 1836	Presentation of left arm; liquor amnii discharged many hours; uterus firmly contracting. Child expelled putrid and doubled up	Died; uterine phlebitis and peritot.
42	Nov. 3, 1836	Presentation of left arm with funis. Turning unsuccessfully attempted. V.S. employed: pains increased; trunk pressed down into brim. Turning at last completed with safety: child dead	Recovered.
43	Nov. 14, 1836	Sudden rupture of membranes; left arm hanging out of external parts, and right arm in upper part of vagina. Foot grasped with great difficulty	Recovered.

43

No.	Date.	Symptoms and Treatment.	Result.
44	May 24, 1837	Right arm with umbilical cord, not pulsating, hanging out of external parts. Many ineffectual efforts had been employed to turn; the operation at last performed	Recovered.
45	Dec. 23, 1837	Presentation of left arm; uterus firmly contracted. Operation of turning tried, but failed. Opiates used. Arm removed from shoulder: uterus contracted on trunk, and caused it to recede, rendering application of crotchet difficult. Trunk separated from head; head extracted without much difficulty	Died; laceration of uterus.
46	Jan. 18, 1838	Twins; presentation of left arm of second child; liquor amnii evacuated; arm and shoulder thrust to outlet; right arm also descended. Turning accomplished with great difficulty: child dead	Recovered.
47	Nov. 6, 1838	First labour; left arm hanging out of vagina; shoulder strongly impacted in brim; os uteri dilated; liquor amnii evacuated. Turning completed with difficulty	Recovered.
48	March 15, 1839	Presentation of right arm and funis, without pulsation; os uteri widely dilated; pains feeble. Great difficulty in turning, on account of violent uterine contractions	Recovered.
49	May 24, 1839	Twins; presentation of head and foot of first child: foot brought down with ease. Second child natural	Recovered.
50	Sept 22, 1839	Presentation of right arm and funis; membranes ruptured; os uteri rigid. Turning attempted. V.S. and opiates administered: turning again attempted. V.S. repeated, but turning again ineffectual. Arm removed at shoulder-joint; child eviscerated; head left in cavity of uterus. Head delivered with difficulty by crotchet, on account of rigidity	Died.
51	Nov. 8, 1839	Presentation of left arm; membranes ruptured; os uteri fully dilated. Turning favourably performed	Recovered.
52	Dec. 18, 1839	Left arm hanging out of vagina; uterus firmly contracted around child. Turning accomplished with difficulty, on account of uterine contractions. Great assistance in completing the version derived from a tape fixed around ankle in this and several other cases	Recovered.
53	Oct. 14, 1840	Presentation of hand with head. Hand pushed back into uterus; head descended, and case terminated naturally	Recovered.
54	April, 1841	Presentation of right arm; membranes entire. Turning easily performed	Recovered; uterine inflammation.
55	Aug. 16, 1841	Right arm in vagina; membranes long ruptured, and uterus contracting ten hours, but not strongly. Turning performed without difficulty; hand passed between child and part of pelvis, fore-finger in ham; child dead	Recovered.
56	Nov. 24, 1841	Presentation of right arm; membranes ruptured; uterus acting forcibly around child. Turning difficult	Recovered.
57	Jan. 19, 1842	Left arm and shoulder fixed in brim; os uteri partially dilated; uterus firmly contracting; membranes ruptured four days. Turning safely completed: adhesion of placenta. Seized soon after with hemoptysis	Died; hemorrhage from the lungs.
	June 20, 1842	Twins; presentation of arm of second. Turned with ease. Two hours elapsed after birth of first child: child alive	Recovered.
59	Aug. 2, 1842	Presentation of arm, foot, and part of funis. Great difficulty in turning	Recovered.

60	Sept. 8, 1842	Presentation of left arm and funis, without pulsation; liquor amnii evacuated forty-eight hours; os uteri very rigid; uterus contracted firmly on child. Great difficulty in turning, and in getting the shoulders out of the brim and the nates into it	Recovered.
61	Sept. 16, 1842	Liquor amnii discharged twenty-four hours; an upper extremity in the vagina; labour-pains only a few hours. Both feet brought down into vagina. Version could not be completed till a tape had been passed around the ankles	Recovered.
62	Oct. 25, 1842	Twins; arm of second presented. Turning easily accomplished: child alive	Recovered.
63	Nov. 19, 1842	Left arm in vagina; liquor amnii not completely discharged; uterus contracting, but not forcibly, around the child. Great difficulty in passing the hand into the uterus; obliged repeatedly to change the hands. The chief difficulty arose from the head lying on the forepart of the pelvis. Difficulty in turning after the foot had been grasped: child dead	Recovered.
64	Feb. 16, 1843	Shoulder and arm presenting. A foot brought down into the vagina, but the version could not be completed: on putting a tape round the ankle it was soon accomplished	Recovered.
65	April 31, 1843	Head, arm, and funis, without pulsation. Perforation and extraction with the crotchet	Recovered.
66	April 9, 1843	Child premature. Turned and extracted without much difficulty. Child dead	Recovered.
67	June 20, 1843	Labour very protracted. Twins. Head and hand of the first presented; forehead to the pubes; delivered with forceps. An arm of second child felt through the membranes; turning immediately performed. Both alive.	Recovered.
68	July 25, 1843	The head, arm, and funis presented of a dead and premature child. By pulling upon the arm, easily extracted. The child doubled as in spontaneous evolution.	Recovered.
69	Aug. 1, 1843	A patient of the St. Marylebone Infirmary. First child. Membranes ruptured seven days; liquor amnii gone; great rigidity of external parts. Left shoulder and arm low in the vagina. Uterus contracting so firmly around the body of the child, that the hand could not be passed in any direction into the uterus. shoulder and arm drawn down to deliver by forced evolution. The hand at last introduced, and the feet brought down, and the delivery completed.	Recovered.
70	Nov. 1, 1843	In labour forty-eight hours before the presenting part was ascertained. Right arm and shoulder in the vagina; liquor amnii gone. An experienced surgeon spent four hours in attempting to turn; he removed the arm at the shoulder-joint and perforated the thorax, but was so exhausted that he could not complete the delivery. I made repeated but unsuccessful efforts to introduce my hand; then tore open the thorax and abdomen with the crotchet, and, fixing its point on the spine, dragged the pelvis and lower extremities forward, and delivered.	——
71	Nov. 2, 1843	An arm and foot of a premature child fourteen hours in the vagina; attempts made to bring down the foot unsuccessful; effected readily after a tape had been put around the ankle.	Recovered.

LECTURE XXXII.

ON PRESENTATIONS OF THE UMBILICAL CORD, AND LABOURS WITH TWO OR MORE CHILDREN.

The umbilical cord may present along with the head, nates, or extremities of the child. Dr. Saxtorph has collected together, from various authors, 292 cases of prolapsus of the cord, in 212 of which the head presented; in 41, the head and extremities; in 5, the nates; in 20, the feet; and in 12, the arm or shoulder. Of 116,277 labours, the funis presented 480 times, being about 1 in 242. Dr. Churchill states, from nearly the same sources, that prolapsus of the cord, in Britain, occurred 226 times in 47,377 cases, or about 1 in 209½: in France, 82 times in 36,621 cases, or about 1 in 446½: in Germany, 93 times in 14,514 cases, or about 1 in 156. Putting the whole of these together, we have 98,512 cases of labour, and 401 examples of prolapsed cord, or about 1 in 245½. Of 355 of these cases, 220 children were born dead, and there is no difficulty in explaining the cause of this great mortality. The cord is sometimes felt through the membranes, pulsating in the progress of the first stage of labour, but when they burst, and the liquor amnii flows out, a portion of the cord passes through the os uteri into the vagina, or out of the external parts, and is exposed to more or less pressure from the head of the child, as the labour advances. The vessels of the cord continue to beat for some time, but their pulsations gradually become more and more feeble, and at last entirely cease, if the compression is great and long continued. The circulation of the fœtal blood through the placenta is interrupted — the necessary changes in it are not effected by the maternal blood — and the consequence is the death of the child before its expulsion, by a process similar in all respects to asphyxia after birth. In the operation of turning, the child is not unfrequently destroyed by unavoidable compression of the cord with the hand, when it has not escaped from the uterus, or been exposed to the cold air: and the same occasionally takes place in the vagina, from the pressure of the nates or head interrupting the circulation in its vessels. It is generally believed that the child is exposed to much greater danger when the cord descends in the anterior than in the posterior part of the pelvis. Some children appear to perish much more quickly than others, from prolapsus of the funis. In the last case of this kind which has come under my observation, the membranes were ruptured, and a great part of the liquor amnii discharged at the commencement of the labour, and a long coil of the cord immediately after passed into the vagina; but though the labour continued for eight or ten hours, and the vessels must have been subjected to great pressure from the head in the pelvis, yet the child was born alive by the natural efforts. It seemed more advisable to trust to these than to any of the means hereafter described. If the circulation in the cord be arrested for a few seconds only in some children, they cannot be made to breathe after birth, while in others, even when the blood has almost entirely ceased for some time to flow through the vessels — at least has been so feeble that it could scarcely be felt — respiration has been established readily on exposure to the air.

Prolapsus of the cord has been observed, like other preternatural presentations, to occur repeatedly in the same persons in successive pregnancies, and where no satisfactory cause could be assigned for the occurrence. Sudden rupture of the membranes, and escape of a great quantity of liquor amnii; unusual length of the cord; attachment of the placenta to the inferior part of the uterus, and the cord terminating in its lower margin; irregular shape, or irregular action of the uterus; unfavourable position of the trunk and extremities of the child; the death of the child and distortion of the pelvis; have all been considered causes of presentation of the umbilical cord, and probably may, in certain cases, assist in producing the accident.

I regret being obliged unreservedly to acknowledge that no generally successful plan of treatment has yet been discovered for prolapsus of the cord. If it does not pulsate, the child is dead, and the case should be treated as if the cord had not descended before the child: the condition of the mother alone is then to be considered.

If a shoulder or arm presentation is complicated with prolapsus of the cord, the operation of turning should be performed as soon as the circumstances of the case will permit, and compression of the cord be avoided as much as possible. Should the cord pass down before the nates or lower extremities, the rules which have been already pointed out for the treatment of cases referred to this order of preternatural labour should be strictly observed, and the condition of the umbilical arteries closely watched. If we could by any means contrive to effect a reduction of the portion of prolapsed cord, or push it back into the uterus above the head, and retain it there till the head had passed through the os uteri, or completely distended it, or if we could by any means hasten the delivery, the danger to which the child is exposed would evidently be averted. The whole hand must be introduced into the vagina, and not the fingers merely, if you would succeed in reducing the cord. This I have found to be the case in actual practice, and I am persuaded there is no other method upon which any dependence can be placed. "It has been proposed," says Dr. Merriman, "to carry the cord upon the points of the fingers, or upon a forked piece of cane or whalebone, through the os uteri and above the head of the child, so as to prevent the funis being pressed upon as the head descends through the pelvis. But this expedient has been often found to fail, for upon withdrawing the fingers, or the forked stick, the funis usually sinks again into the vagina. Dr. Aitkin says, that a grooved piece of ivory tied on the edge of the point of the lever, to retain and carry the cord, returns it with certainty. But many of Aitkin's recommendations are very fanciful." Dr. Mackenzie informed Dr. Denman of another method which he had tried. "Instead of attempting to replace the descended funis in the common way, he brought down as much more of it as would come with ease, and then enclosed the whole mass in a small bag made of soft leather, gently drawn together with a string, like the mouth of a purse. The whole of the descended funis, enclosed in this way, was conveniently returned, and remained beyond the head of the child till this was expelled; and the bag containing the funis having escaped compression, the child was born living." But he very ingeniously told me, that he had afterwards made several other trials in the same manner without success. Dr. Denman does not, however, state whether a pitchfork, or the fingers, or what other means, were employed on these occasions to push up into the uterus the piece of cord tied in the soft leather bag. "Many years ago," says Dr. Denman, "Mr. Croft also informed me of a method which he had successfully used in these cases. When he had in vain attempted to replace the funis in the common way, he carried up the descended part beyond the head till he met with the limb of the child — suppose the leg or arm. On this he suspended the funis, and then withdrawing his hand suffered the labour to proceed in the natural way." Mr. Croft met with other cases in which he had been equally successful in suspending the funis over the limbs of the child. "There may be much of accident in the success of these different methods," observes Dr. Denman, who had sagacity enough to know their real value, "but I should believe, whenever it may have been thought necessary to introduce the hand into the uterus, that it would be found more expedient to complete the business by turning the child and delivering by the feet." "Dr. Davis recommends an instrument," says Dr. Merriman, "consisting of a thin plate of flat elastic steel, gently curved, and fixed into a wooden handle. Near the point are two or three small apertures; through these apertures it is proposed to pass, by means of a needle, sufficiently strong threads, and to connect by these threads the prolapsed funis to the instrument, and *then to remove the funis out of the way of confusion* by carrying the point of the instrument above the head of the child." Dr. Merriman does not inform us of the number of cases in which Dr. D. Davis succeeded by this instrument *in removing the funis out of the way of confusion*, but merely observes, that "any of the foregoing methods which appear practicable in particular cases may be attempted, but there is reason to fear they will frequently fail."

In 1835, Dr. Michaelis, of Kiel, published some Observations, in a German journal, on the Reposition of the Umbilical Cord, and recommended the hand, or an elastic catheter with a silk ligature, to be employed for this purpose. The following is the account of Dr. Michaelis's method of treatment, contained in the first volume of the British and Foreign Medical Review. "From what has been stated, reposition of the cord consists in carrying it above that circular portion of the uterus which is contracted over the presenting part. The reposition of the cord may be effected by the hand, or by means of an elastic catheter or ligature. In replacing the cord by means of the hand alone, Dr. Michaelis remarks that we shall effect this more readily by merely insinuating the hand between the head and the uterus, and gradually passing it further round the head, pushing the cord before it; in this manner we do not require to rupture the membranes where we have felt the cord before the liquor amnii has escaped — a point of considerable importance. The reposition by means of the catheter is effected by passing a silk ligature, doubled, along a stout elastic catheter from twelve to sixteen inches in length, so that the loop comes out at the upper extremity; the catheter is introduced into the vagina, and the ligature is passed through the coil of the umbilical cord, and again brought down to the os externum. A stilet, with a wooden handle, is introduced, and its point passed out at its upper orifice, and the loop of the ligature hung upon it; it is then drawn back into the catheter, and pushed up to the end. The operator has now only to pull down the ends of the ligature, passing the catheter up to the cord, which now becomes securely fixed to its extremity. When the reposition has been effected, he has merely to withdraw the stilet; the cord is instantly disengaged. To prevent any injury, &c., the ligature should be brought away first, and then the catheter."

Dr. Michaelis has recorded eleven cases of prolapsus of the cord where it has been returned by the above means, in nine of which the child was born alive. In three cases the arm presented also, which was replaced, and the head brought down; in two of these the child was born alive. This is the first time I ever read or heard of the reposition of the cord being attempted before the rupture of the membranes and escape of the liquor amnii. Nothing but mischief could possibly result from "insinuating the hand between the head and the uterus, and gradually passing it further round the head, pushing the cord before it," before the rupture of the membranes. The most important part of the treatment in cases of funis presentations is to preserve the membranes entire as long as possible. Let me entreat you, therefore, to avoid all interference at this period, for the cord is never exposed to dangerous compression before the membranes are ruptured and the liquor amnii is discharged. I should have thought the catheter and ligature, and stilet with wooden handle, as here recommended to be employed in the reposition of the cord, would be the best means you could possibly adopt for putting the cord into "the way of confusion." But not only is the cord here stated to have been replaced by this awkward contrivance, and nine out of eleven children saved, but in three cases of arm presentation *the arm is replaced, and the head brought down,* and in two of these the child was born alive.

In the Dublin Lying-in Hospital, the practice which Dr. Collins found of most benefit in cases of presentation of the umbilical cord was keeping it up with great diligence with the fingers, assisted often by a piece of sponge. "It is quite impossible, however," he says, in the majority of cases, to succeed in this way in protecting the funis from pressure, as it is no sooner returned than we find it forced down in another direction. We tried in a few instances to return the funis completely into the uterus, by passing a piece of soft twine through a long gum elastic catheter, so as to retain the funis exactly at its extremity, and when thus fixed a strong copper wire was introduced into the catheter in order to render it sufficiently firm to carry up the cord: when elevated as far as practicable by these means, the wire was withdrawn, and the catheter retained its position during the subsequent expulsion of the child. With this contrivance there was not a sufficient number of trials, as it was but a short time previous to my retiring from the hospital that this expedient was had recourse to." "The total number of cases of prolapsus of the umbilical cord met with by Dr. Collins was 97; of these, 24 children were born alive; none of the mothers sustained any injury in the delivery. Twelve of the 97 occurred in twin cases; and in seven of the twelve it was the cord of the second child. Nine occurred where the feet presented (not including two met with in twin children), which was in the proportion of one in every 14 of such presentations; two only, where the breech presented, which was in the proportion of one in every 121 of such presentations — this approaches nearly the proportional average in all deliveries, which is one in 171½; four occurred where the shoulder or arm presented — this is in the proportion of one in 9 of such presentations. Seven occurred where the hand came down with the head. Seven of the 97 children were born putrid; three of the 97 were premature births, viz., two at the 7th, and one at the 8th month."

Without attempting to press up the prolapsed portion of cord above the head, it has been recommended to place the cord towards one of the sacro-iliac synchondroses, with the view of diminishing the danger of compression. As there is no angle in the gravid uterus corresponding with either sacro-iliac synchondrosis in the dried pelvis, little good would probably be effected by any such attempt to remove the funis out of the way of compression.

Where the head has descended into the pelvis sufficiently low for the application of the short forceps, and the pulsations of the cord are becoming weak and indistinct, there can be no doubt about the propriety of delivering as expeditiously as possible with the forceps; the misfortune is, however, in the greater number of cases of this description, that the child has been destroyed by the pressure before the head is within reach of the instrument, and it can seldom be applied till the child is dead. In two cases Dr. Merriman succeeded by means of the forceps in bringing the children alive.

The operation of turning has been had recourse to in many cases of presentation of the umbilical cord, and in some instances with success, the child's life having been preserved, and the mother having escaped all injury. Guillemeau, Portal, Mauriceau, Giffard, Chapman, and Smellie, and the most eminent practitioners of all countries before the commencement of the present century, delivered by turning the child in most of these cases, and sometimes they did so when they knew that the child was dead, and when it would have been better practice to have perforated the head and extracted it with the crotchet. In some cases there can be no doubt that the child's life has been saved by the operation of turning, and that the mother has not been injured, but in the reports of the greater number of such cases there is little or nothing stated respecting the mothers' recovery. In 33 cases of prolapsus of the funis recorded by Mauriceau, who was more successful in the treatment of these cases than any other practitioner, he delivered by turning 19 times, and all the children were born alive except one, and most of the women were uninjured. Of 21 cases related by Giffard, in a great proportion of which, if not in all, the operation of turning was performed, or his extractor employed, 17 of the children were born dead; and how many of the women recovered it is impossible to tell, as he does not state. Had Giffard's cases been all left to nature, the probability is, a much greater number of the children would have been born alive, and the women would have escaped the danger to which they were exposed by the operation of turning. The following passage proves, I think, that Giffard must have left some cases of prolapsus to nature. "If you cannot return the navel-string, and there retain it, you ought as soon as possible to turn the child, although it presents with the head, and bring it by the feet, unless it is sunk very low into the vagina, and that a few pains will protrude it." "If the navel string comes down," says Smellie, "by the child's head, and the pulsation is felt in the arteries, there is a necessity for turning without loss of time; for unless the head advances fast, and the delivery is quick, the circulation in the vessels will be entirely obstructed, and the child consequently perish. If the head is low in the pelvis, the forceps may be successfully used: no doubt, if the pelvis is very narrow, or the head too large, it would be wrong to turn; in that case we ought to try if we can possibly raise the head so as to reduce the funis above it, and after that let the labour go on; but if the waters are all gone, and a large portion of the funis falls down, it is impossible to raise it, so as to keep it up, even although we could easily raise the head; because as one part of the funis is pushed up with the fingers, another part falls down and evades the reduction, and to raise it up to the side and not above the head will be to no purpose: when a little only jets down at the side of the head, our endeavours will be for the most part unsuccessful." In the ninth case, related at p. 255, vol. iii., the head and funis presented and the membranes were ruptured; he tried to pass the cord above the head, but finding as he pushed up the different folds of the funis they again descended, he turned. "When the head is not uncommonly large," he observes upon this case, "nor the pelvis narrow, this method of delivery seems most advisable to save the life of the child, for unless a very small part of the funis is come down, it seldom can be slipped up so high as to prevent the pressure of the head, and obstruction of the circulating fluids in the vessels of the cord."

Where you have reason to anticipate any difficulty in turning, and even in cases where the uterus is dilated, the membranes unruptured, and the parts relaxed, and every thing tempts you to turn, you had better abstain from all interference in this way. Preserve the membranes entire as long as possible, and when the cord descends after their rupture, pass the whole hand into the vagina, and force it above the head, and if this fails, use the forceps, or then leave the case to nature. If it is a first child, and the os uteri is rigid and only partially dilated, and the contractions are strong, you can do no good by attempting to turn; you will not save the child, and you may rupture the uterus when you least expect to do so. "As to turning," says Dr. Collins, "the risk to the mother is in the majority of cases so great as to forbid its employment, nor do I think the practitioner justified by the circumstances in so greatly hazarding his patient's life."

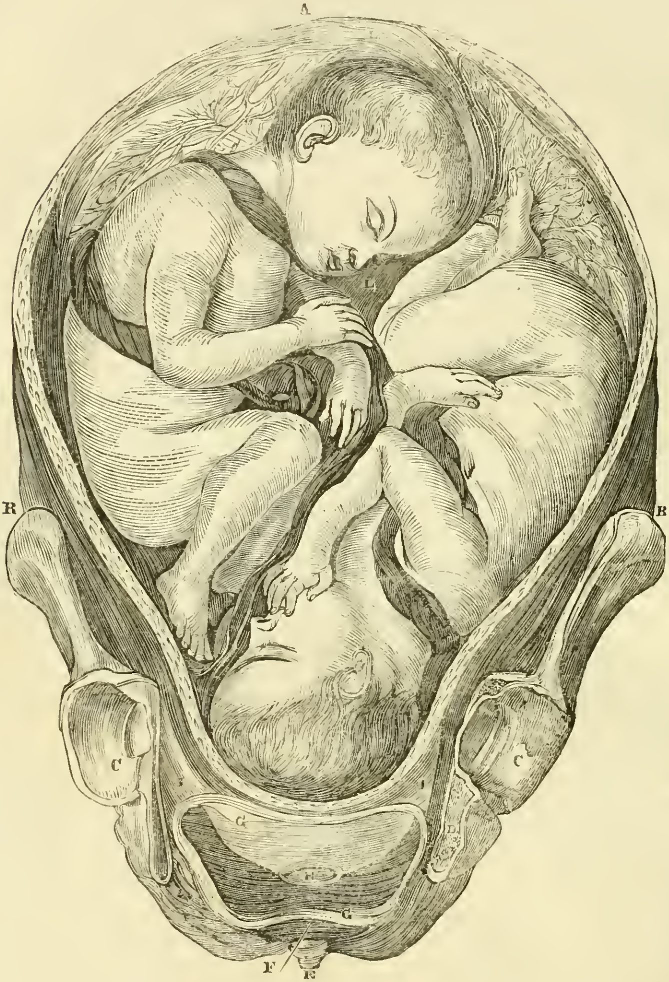
ON LABOURS WITH TWO OR MORE CHILDREN.

Dr. Churchill states that we find among British practitioners, in 161,042 cases of labour, 2477 cases of twins, or about 1 in 69, and 36 cases of triplets, or one in 4473. Among French practitioners, in 36,570 cases, 332 cases of twins, or about 1 in 110, and 6 of triplets, or 1 in 6,095. Among German practitioners, in 251,386 cases, 2,967 cases of twins, or about 1 in 84, and 35 of triplets, or about 1 in 7,185. Taking the whole we have 448,998 cases and 5,776 of twins, or 1 in 77¾, and 77 cases of triplets, or 1 in 5,831. The statistics of the British Lying-in Hospital, which was instituted in 1749, are not included in the above statement. Since the institution of this hospital, 35,978 women have been delivered, and 36,401 children born. Four hundred and twenty-three had twins, and one three boys. The proportion of boys to girls born in this hospital is about 18 to 17; of still births, about 1 in 25; and women having had twins, about 1 to 85. I have seen only two cases of triplets during the last sixteen years, and neither of them occurred in this hospital. The proportional number of women giving birth to twins, appears, according to Dr. Collins's report, to be much greater in Ireland than in any other country of Europe from which authentic records have been obtained. In France, he says, there is 1 twin case in every 95 births; in Germany, 1 in 80; in England, 1 in 92; in Scotland, 1 in 95; in Ireland, 1 in every 62. Of 129,172 women delivered in the Lying-in Hospital of Dublin, 2062 gave birth to twins; 29 of the 129,172 produced 3 at each birth, which is in the proportion of 1 in 4450. One only gave birth to four. Of 697 cases of twins collected by Dr. Churchill, 417 children of the 1394 died, or about 1 in 3½; and out of twelve cases of triplets, *i. e.*, 36 children, 11 were lost, or 1 in 3. A considerable number were premature and still born, and some putrid at birth.

Women are exposed to much greater risk who give birth to twins than those who are delivered of one child; and the danger is produced chiefly by the over-distension of the uterus during pregnancy, the preternatural presentation of one or of both the children, and the occurrence of hemorrhage from the want of uterine contraction after the separation and expulsion of the placentæ. Inflammation of the deep-seated structures of the uterus, especially the veins, not unfrequently proves fatal to women who have been delivered of twins. We seldom discover before the birth of the first child that there is a second or third in the uterus. By the stethoscope it has sometimes been ascertained, from the remarkable difference in the action of the two hearts. I have never from auscultation been absolutely certain of the existence of twins before the commencement of labour; but in some cases, from the great size and unusual shape of the abdomen, the peculiar movements described, and the irregularity and feebleness of pains after labour has begun and continued many hours, I have suspected there were twins, and my suspicions have been well founded. But I must admit that all these symptoms are sometimes fallacious, and that women often feel confident from these and other symptoms that they will have twins, when they bear only one child.

It is in our power, and it is our duty, in all cases to ascertain with certainty, after the expulsion of the first child, if there be a second within the uterus. The small size of the first child often leads us to suspect that there is another, before the hand is applied over the abdomen, and the head, nates, or some part of the second child, is felt through the parietes. If the uterus contains a second child, it is still large, hard, and unequal; the uterus still fills the epigastrium, at least reaches considerably above the umbilicus. I have been repeatedly called to deliver a second child where there was nothing within the uterus but a great placenta. In all cases, therefore, you will not trust to the application of the hand over the abdomen, but make an internal examination; not merely for the purpose of determining whether there is a second child, but, if there is, to ascertain the nature of the presentation. Put the umbilical cord of the first upon the stretch, and pass along it two fingers of the right hand, and if there is a second child you will feel the second bag of membranes, and discover whether the head, the nates, the extremities, or funis present. It is necessary to inform the nurse of the fact.

Fig. 65.



The preceding figure, from Smellie, gives a front view of twins in the beginning of labour, the anterior parts being removed as in most of the other figures. The uterus is stretched with the membranes and liquor amnii. The two placentas are represented adhering to the posterior part of the uterus, the two fœtuses lying before them : one with its head in a proper position at the inferior part of the uterus, and the other situated preternaturally, with the head to the fundus; the bodies of each are here entangled in their proper funis.

When the nates or inferior extremities of the second child present, the binder should be applied firmly round the abdomen, some stimulant should be given, and some time allowed for the uterus to contract. At the end of an hour, or even earlier, if the pains do not return, rupture the membranes, tighten the binder, and bring down the lower extremities, and deliver the child in the manner already described when the nates present. No good can in any case be produced by allowing the second child to remain longer in the uterus than an hour after the birth of the first.

If a shoulder or superior extremity of the second child presents, proceed immediately to perform the operation of turning, which is easy and safe both for the mother and child, if you pass up the hand into the uterus, before the membranes are ruptured

In twin cases, where the head of the second child presents, apply the binder, rupture the membranes, and the uterus will probably contract upon the child and expel it without any further artificial assistance. If, however, the labour has been very protracted, and there is great exhaustion, and some risk lest the natural powers should be insufficient for the expulsion of the second child, I am disposed to think, as the operation of turning is so easily accomplished, that it would be better at once to have recourse to it than to trust to the forceps if further assistance should be required. At all events it is invariably necessary to rupture the second set of membranes, if you determine to leave the expulsion of the second child to nature, for the uterus may remain twenty-four hours or longer quiescent if this is not done. After the delivery of both children, always remember the danger of uterine hemorrhage.

LECTURE XXXIII.

ON LABOURS COMPLICATED WITH UTERINE HEMORRHAGE FROM PLACENTAL PRESENTATION.

The placenta may adhere to any part of the inner surface of the uterus — to the fundus, body, or cervix, and hemorrhage never takes place to a dangerous extent during pregnancy or labour unless the connection of the placenta with the uterus has been destroyed. A solution of continuity must take place between these organs, before it is possible for a considerable hemorrhage to occur from the gravid uterus. The partial detachment of the membranes from the vicinity of the cervix might occasion a slight oozing of blood, from the rupture of some small decidual arteries and veins, but the quantity proceeding from this source can never be great, or produce what is usually called a flooding. It is from the great semilunar, valvular-like, venous openings in the lining membrane of the uterus, which you have seen in various preparations, and of the arteries which are laid open by the separation of the placenta, that the blood alone flows in uterine hemorrhage. All the different causes of flooding produce their effect by separating and exposing the arteries and veins by which the circulation of the maternal blood is carried on in the placenta. Blows, falls, shocks of various kinds, mental and physical, bodily exertion and fatigue, the movements of a carriage along a rough road, attempts to raise a heavy weight, dancing, the abuse of stimulants, frequenting hot, crowded assemblies, morbid conditions of the placenta, twisting of the umbilical cord round the neck of the child, attachment of the placenta to the cervix uteri; all these causes produce hemorrhage, by mechanically separating the placenta from the part of the uterus to which it is attached. There is not an actual wound in the uterus where the placenta adhered, the lining or mucous membrane is not detached and expelled, yet there is a considerable resemblance, as has already been stated, between this portion of the inner surface of the organ after delivery, and a stump after amputation; in both, the cavities of the arteries and veins are laid open or exposed, and they are consequently liable to be affected by similar diseases.

Dr. Jones first proved by experiment that when an artery is divided, nature employs certain means adapted to arrest the flow of blood, the most important of which are the retraction and contraction of the divided extremity of the vessel, and the formation of a coagulum of blood within its orifice, or rather two coagula, one within the contracted orifice of the vessel, and the other within its sheath. Nearly similar means are employed by nature for preventing fatal hemorrhage from the uterus, when the placenta is detached; and if nature did not employ these means, and at the proper period, and with sufficient force, death from hemorrhage would probably take place in all cases immediately after the expulsion of the child and separation of the placenta. The same muscular contractions which expel the contents of the gravid uterus close the mouths of the exposed vessels in the lining membrane, until coagula of the fibrin of the blood are formed within them, which establish a permanent barrier against the further effusion of blood. The oblique valvular manner in which the veins open into the cavity of the uterus must contribute powerfully to accomplish the same purpose. Before delivery the contractile powers of the uterus cannot be effectually exerted in closing the vessels; consequently the orifices of the veins must be stopped in a temporary manner by coagula, and the insufficiency of the plugs, without uterine contraction, to restrain hemorrhage, is proved by the frequent return of the accident on the application of the slightest occasional cause, and the consequent insecurity of the patient from a recurrence of the discharge, fresh portions of the placenta being likewise often separated till the contents of the uterus be expelled, and the orifices of the vessels closed by the muscular contractions of the organ. All the different efficient means which are employed for checking the discharge in uterine hemorrhage, either excite the contractions of the uterus or promote the coagulation of the blood itself within the vessels.

Until the seventh month of pregnancy the bloodvessels of the uterus have not attained a sufficient size to pour out blood in so great a quantity as suddenly to destroy life, though the discharge may be very profuse, and produce alarming symptoms. The remedies which ought to be employed when hemorrhage takes place in the early months have already been described, and are chiefly as follows: venesection, where the patient is plethoric and the circulation excited; rest in the horizontal position; the free admission of cool air; ice in a bladder, or cold vinegar and water, laid over the hypogastrium; cold acidulated drinks; the use of superacetate of lead and opium; the introduction of a sponge into the upper part of the vagina, and, where these fail, puncturing the ovum, exhibiting the ergot of rye, and endeavouring by all other means to excite the contraction of the uterus and the expulsion of its contents. There are very few, if any, cases in which it is safe to attempt to introduce the whole hand into the uterus, to deliver by turning the child, before the end of the sixth month. Uterine hemorrhage, in the latter months of pregnancy, and during labour, is always accompanied with great danger; it does and ought to excite alarm in all cases, and it occurs, first, where the placenta presents, or has originally adhered to the cervix uteri, and been afterwards detached from the uterus in consequence of the shortening of the cervix which takes place in the seventh month; and, secondly, where the placenta has adhered to the fundus of the body of the uterus, and been separated from it by external violence, the umbilical cord surrounding the neck of the child, a morbid state of the placenta itself, or some other accidental cause. The first of these varieties is usually called unavoidable, the second, accidental, uterine hemorrhage.

ON UTERINE HEMORRHAGE FROM PLACENTAL PRESENTATION.

Hippocrates says, the after-birth should come after the child, for if it were to come out first, the child could not live, because it derives its life from the after-birth, as a plant does from the earth. Cases of uterine hemorrhage from placental presentation must have been frequently observed by the ancients, but they have not been described in their writings. In 1609, Guillemeau stated that the placenta sometimes presents or comes before the child, and that this gives rise to a dangerous hemorrhage which nature is unable to suppress. In Chapter XII., which is entitled, "Le moyen de secourir la femme quand l'arrierefais se presente le premier," he states that when the placenta comes first, the most certain and expedient measure is immediate delivery, because there is usually a constant flooding, in consequence of the openings in the veins which are situated in the walls of the uterus to which those of the placenta are joined, being laid open or exposed, and that the blood flows out whenever the uterus contracts, as in labour, to expel the child. The source of the discharge and cause of the death of the fœtus is thus accurately described. "D'autre part l'enfant estant enfermée en la matrice, l'orifice estant bouche par le dit arrierefais, ne respire plus par les arteres de la mère, sera tost suffoqué faute d'ayde, et mesme englouty du sang qui est contenu en la matrice, et qui coule des veines qui sont ouvertes en icelle." But before attempting any thing, two circumstances, he says, are to be observed: the first is, to consider whether the placenta is little or far advanced; for if the former, having placed the mother in the proper position, it must be replaced and pushed back with the greatest diligence, and if the head presents it must be brought down that it may be expelled as in natural labour. But if some difficulty should occur, so that the head could not advance, or that the mother, or infant, or both, are feeble, and there is a probability of the labour being protracted, without doubt the best expedient is to bring down the feet of the child, and deliver as gently as possible. The other point to be observed is, that if the after-birth is much advanced, and cannot be replaced in consequence of its size and the hemorrhage, and that the child is closely following it, and requires only to pass into the world, the placenta must be completely drawn forth. The works of Guillemeau do not contain a single observation to justify the assertion made by Dr. Rigby, that he evidently supposed that this presentation of the placenta at the os uteri was owing to its having been separated from its usual situation in the uterus, and fallen down to the lower part. Not only has this groundless assertion been made respecting Guillemeau, but other authors, who have expressly stated that on introducing the hand into the uterus to deliver by turning, they felt the placenta adhering all round to the cervix.

The 28th Chapter of Mauriceau's Treatise (1668) is entitled, "De l'accouchement auquel l'arriere-faix se presente le premier, ou est tout-à-fait sortit devant l'enfant." The symptoms and treatment of cases of placental presentation are here accurately described, and in all cases of hemorrhage from this cause he recommends immediate delivery. If the placenta has not entirely escaped, and the membranes are not ruptured, he advises the part of the placenta which presents to be put aside with the hand, which is to be passed up into the uterus, the membranes ruptured, and the delivery completed by turning. The rules for the treatment of these cases are laid down with the greatest precision. When the placenta was entirely separated, then only did he consider it as a foreign body, and recommend its extraction before the child, as Guillemeau had done: but to this practice he states, as an obvious objection, that the placenta is strongly attached to the membranes which surround it, and that it cannot be drawn out without the membranes enveloping the child being drawn out also. It has also been most erroneously asserted by Dr. Rigby, that Mauriceau invariably speaks of the placenta when at the os uteri as "entirely detached." In the history of his case 423, related at p. 350, the following observation occurs, which I may adduce as a proof perfectly conclusive that Mauriceau does not invariably speak of the placenta when at the os uteri as entirely detached, but, on the contrary, was fully aware of the fact, that the placenta had not been detached from the fundus and pushed down to the orifice by its own gravity. "Mais quoique j'aye dit que l'arriere-faix de cette femme presentoit le premier au passage, dans le temps que je l'accouchai, et que l'excessive perte de sang qu'elle avoit vint de ce detachement, *il ne faut pas croire que cet arriere-faix fut ainsi entièrement detaché de la matrice*, depuis tout le temps que cette perte de sang avoit commencé a parôitre en cette femme : car si cela eut été, l'enfant seroit mort en très peu de temps, ne pouvant pas être vivifié que par le communication du sang de la mère, dont il est privé aussitot que l'arriere-faix est entièrement detaché de la matrice : mais comme il n'y avoit dans le commencement de cette perte de sang que quelque petite partie de l'arriere-faix qui s'en étoit un peu detachée, elle n'avoit pas empeché l'enfant d'être nourri du sang de tout le reste de l'arriere-faix, qui n'avoit pas été entierement separé de la matrice." Mauriceau has related seventeen cases of uterine hemorrhage, in the latter months of pregnancy, from presentation of the placenta, and in sixteen of these delivery was accomplished by passing the hand through the opening formed by the separation of the placenta from the uterus, rupturing the membranes, and turning the child. Two women died after this operation, and one who would not consent to have it performed, died undelivered.

These Cases are Nos. 8, 55, 59, 68, 106, 170, 175, 210, 423, 428, 438, 454, 484, 502, 597, 651. The first occurred in 1669; the last in 1692.

Portal's Treatise (1685) contains the histories of eight or more cases of uterine hemorrhage, in which he found, on introducing the hand to turn the child, that the placenta was not merely at the os uteri, but adhering to the cervix all round; and he states, in the most clear and forcible manner, after relating his first case, that artificial delivery is the only remedy that can preserve the life of women under such circumstances, and that by this means he had saved the lives of several women at the Hôtel-Dieu. In 1664, Case No. 2 occurred during the eighth month, in which, on passing his hand into the uterus, he felt a soft body, which was the after birth, which he gently separated from the uterus, then ruptured the membranes, and brought down the feet of the child and extracted it, dead. In Case 29 (1671), the placenta presented, and the head of the child was forced against it so strongly, that it was torn, and the infant expelled dead. Case 39 occurred also in 1671, in the history of which he states that he felt the placenta adhering on all sides to the orifice of the uterus. "Sur cette assurance, je glissay mes doigts dans les orifices, où je sentis l'arriere-faix qui se presentoit, et qui bouchoit l'orifice de la matrice *de tous costez avec adherances* en toutes ses parties, excepté par le milieu, qui se trouvoit devisé jusques à la membrane, laquelle n'estant pas ouverte, ny les eaux ecoulées j'eus beaucoup de facilité à tourner l'enfant." This woman died from loss of blood some time after delivery, there being scarcely a drop found in the arteries and veins on dissection; and Portal complains, with justice, that the body was examined in his absence by a distinguished accoucheur, but in the presence of the wife of the greatest and most illustrious physician of the age, whose name he has not recorded, and whose memory has perished many years ago. "C'est ce que me fait dire, qu'on a beau faire, on ne fait jamais rein: *quelque belle operation qu'on puisse faire, elle ne fait point d'eclat:* mais bien tout le contraire, qu'une femme soit si bien accouché qu'on souhaitera et que malheureusement elle vient à mourir, ce sera tousjours la faute de celui ou de celle qui aura accouché la femme: tant le medisance a de l'empire sur la verité." Portal's 42d case happened in 1672, in which there was also a considerable hemorrhage, and on passing the hand into the orifice of the uterus, he says he felt the placenta presenting, which he gently separated (" parcequ'il estoit collé à l'orifice interne") because it was glued to the internal orifice. Portal's 43d case, which also occurred in 1672, was one of hemorrhage with placental presentation during the sixth month of pregnancy, and here he also passed up his hand between the uterus and placenta, where the partial detachment had taken place, and brought down the feet of the child; "ensuite je glissay ma main dans l'entrée de la matrice, où je sentis l'arriere-faix qui se presentoit. L'ayant *separé, afin de me frayer le chemin,* je sentis les membranes des eaux que je percay," &c. Another similar case, No. 51, took place in the same year, 1672, and to this history is subjoined a correct explanation of the cause of the hemorrhage which occurs in the latter months of pregnancy, where the placenta adheres to the neck of the uterus. On introducing the hand into the uterus, he says, "J'ouvris cet anneau en telle sorte que je n'eus point de peine à porter ma main dans le fond de la matrice, où en la glissant je sentis le placenta, qui environnoit en dedans l'orifice interne: ce qui estoit la cause de la perte de sang, parceque lorsque l'ouverture de cet anneau se faisoit, le placenta qui se trouvoit contigu à cet orifice, à cause de quelque contiguité qu'il a avec la matrice, à l'endroit où il y est adherant, cet orifice venant à s'ouvrir, il se divise, et en mesme temps les vaisseaux venant à se deviser, cela fait que le sang de la malade se perd en abondance; et si elle n'est promptement secourue, elle meurt bien-tost." He then turned and delivered the child. In concluding the history of this case, he states that in the year 1683 he had completed the delivery successfully in five similar cases, all the women having recovered. His 69th case occurred in 1679, in which he likewise found, on passing the hand, that the placenta was every where firmly adherent to the neck of the uterus, which was the cause of the great hemorrhage. "In Portal's Cases in Midwifery," observes Dr. Rigby, in his Essay on Uterine Hemorrhage, "there are eight in which he was under the necessity of delivering by art, on account of dangerous hemorrhages, and in all of them he found the placenta at the mouth of the womb." This important fact, that in all these cases the placenta was found not merely at the mouth of the womb, but adherent to the neck of the uterus, in some all round to it, is suppressed by Dr. Rigby, nor are the practical conclusions which Portal drew from it described by him.

Dr. Edward Rigby asserts, that "in one case only does Portal attempt to make any practical inference whatever, having, in all the others, contented himself with merely stating the fact of the placenta adhering to the os uteri." The operation of passing the hand between the placenta and uterus, bringing down the feet and turning the child, which Portal had recourse to so promptly in most of the preceding cases, I think you will be disposed to regard as the very best practical inference which he could have drawn, or has yet been drawn by others, from the knowledge of the fact. It has likewise been affirmed by him that "all the authors in midwifery, up to the time of Rœderer and Levret, were ignorant of Portal's explanation." The truth of this you may estimate by the following facts.

In the History of the Royal Academy of Sciences for 1728, it is stated that Petit examined a body of a woman who had died from flooding when near the full period, and he found the placenta adherent to the neck of the uterus, and exactly closing the orifice except at one part, where it was detached, and from whence the discharge of blood had taken place.

Giffard has recorded about twenty cases of placental presentation, and he was likewise completely aware of the fact that the placenta sometimes adheres to the inferior part of the uterus. He concludes the history of his 115th case with the following observation. "I cannot implicitly accede to the opinion of most writers on midwifery, which is, that the placenta always adheres to the fundus uteri, for in this, as well as many former instances, I have good reason to believe that it sometimes adheres to or near the os internum, and that the opening of it occasions a separation, and consequently a flooding." In the history of Case 116 he states that he told the patient "that the only way to save her life was a speedy delivery." When he passed his hand through the os uteri, the first thing he met with was the placenta, which he "found closely adhering round the os internum" of the uterus; which, amongst many other instances, is a proof that the placenta is not always fixed to the bottom of the uterus, according to the opinion of some writers on midwifery: its adhering to the os internum was in my opinion the occasion of the flooding; for as the os internum was gradually dilated, the placenta at the same time was separated, from whence proceeded the effusion of blood. The placenta presented in Cases 120, 121, 158, 160, 184, 209, and 224. In the last of these cases he "felt part of the placenta adhering round about the orifice of the uterus." This case occurred in 1731; and in a further communication of its details, he observes, as he had done before, "I beg leave, before I proceed to give any further account of the delivery, to give my opinion on a point of midwifery in which I differ from most authors that have written on the subject. It is generally believed that the ovum after its impregnation and separation from the ovarium, and its passage through the tuba fallopiana, always adheres, and is fixed after some time to the fundus uteri; in this case the placenta adhered, and was fixed close and round about the cervix uteri, as I have found it in many other cases, so that upon a dilatation of the os uteri a separation has always followed, whence a flooding naturally ensues."

"Giffard," says Dr. Rigby, "has more than twenty cases where the placenta was found at the os uteri: but *plainly supposes that it had not been originally fixed there,* for he says, it is customary in floodings to find the placenta sunk down to the mouth of the womb."

Puzos knew that the placenta sometimes adhered to the cervix uteri: all the authors on midwifery who lived from the time of Portal to that of Rœderer and Levret were not, therefore, ignorant of the fact.

"Il y a eu plus d'un exemple de femmes qui n'ont pû accoucher," he observes at page 98, "parceque le placenta s'étoit collé sur l'orifice de la matrice, qu'il le tenoit hermetiquiment clos, et qu'il empêchoit sa dilatation lors du terme de l'accouchement. C'est donc un peu legèrement que Daventer soutient que le placenta est toujours au fond de la matrice."

Rœderer has given a clear account of the symptoms and treatment of cases of uterine hemorrhage from attachment of the placenta to the lower part of the uterus, in his Elements of Midwifery, published at Göttingen in 1759. The placenta, he states, can be felt firmly adhering to its inferior segment. He denies the possibility from any cause of the placenta being detached from the fundus uteri and falling down to the cervix. In some cases the whole placenta covers the orifice of the uterus; in others, and these are much less dangerous, and may be committed to nature, he states that it adheres only to the side of the aperture. He has described with great minuteness the operation of turning the child, and pointed out its necessity in all those cases in which a great portion of the placenta adheres to the neck of the uterus. He recommends the dilatation of the orifice to be slowly and cautiously effected by the hand, which, he says, is not to be pushed through the centre of the placenta, but through the opening formed by its detachment from the uterus.

Levret, in his Dissertation in 1761, undertook to prove, what it appears had previously been demonstrated — 1. That the placenta sometimes adheres to the circumference of the internal orifice of the uterus; 2. That where this occurs, uterine hemorrhage is *inevitable* in the latter months of pregnancy; and 3d, that the only method of obviating this dangerous accident is to deliver immediately by turning the child. He refers to the cases of Van Horne, Schaeher, Plasner, Brunet, Heister, Portal, Petit, and to those which came under his own observation, to prove the truth of his first proposition. He quotes also in its support the opinions of Massa, Drelincourt, Mauriceau, Bidloc, and Noortwyk, that the outer membrane of the ovum adheres to the whole inner surface of the uterus, and that the spheroidal mass, being equally compressed on all sides by the uterus, cannot be displaced, nor the placenta slide down from the fundus to the cervix as Daventer supposed. Levret observed that uterine contractions invariably increased the hemorrhage, where the placenta had been implanted over the cervix uteri, and that the contrary effect was produced where the placenta had adhered to the fundus uteri, and been detached by an accidental cause.

In a case which occurred in 1752, he passed the hand through the substance of the placenta, and delivered the child. The child was dead, and the mother died soon after. Levret appears to be one of the first who recommended, as a general rule, forcing the hand through the centre of the placenta, instead of passing it between the uterus and its margin, as Mauriceau and Portal had done. The occurrence of uterine hemorrhage from placental presentation he attributed to a development of the cervix uteri from above downward, in consequence of which a separation took place between the two organs, and the vessels of the uterus were exposed.

Smellie also knew, in 1745, that the placenta sometimes adheres to the lower part of the uterus, and he has related nine cases to illustrate the fact, and the appropriate treatment. "The edge or middle of the placenta sometimes adheres," he observes, "over the inside of the os internum, which frequently begins to open several weeks before the full time; and if this be the case a flooding begins at the same time, and seldom ceases entirely until the woman is delivered. The discharge may, indeed, be terminated by coagulums that stop up the passage; but when they are removed, it returns with its former violence, and demands the same treatment that is recommended above" — viz., artificial delivery.

"A case of hemorrhage," observes Dr. Rigby, in the preface to the sixth edition of his Essay, 1822, "in which I found the placenta attached to the os uteri, occurred at a very early period of my practice; but not finding such a circumstance recorded in the lectures which I had attended or taken notice of in the common elementary treatises on midwifery, I considered it at first merely as a casual and rare deviation from nature. In a few years, however, so many similar instances fell under my notice, as to convince me that it was a circumstance necessary to be inquired after in every case of hemorrhage; and this conviction was confirmed by the perusal of cases of midwifery; for I then found that the fact of the placenta being thus situated has been recorded by many writers, though in no instance, which had then reached me, had any practical inferences been deduced from it. It appeared to me, indeed, most extraordinary, that such a fact, known to so many celebrated practitioners, should not long before have led to its practical application, and, in consequence, to more fixed principles in the treatment of hemorrhage from the gravid uterus; and I may perhaps be allowed to say, that I congratulate myself, young in years and practice as I then was, in being probably the first to suggest an important improvement in the treatment of one of the most perplexing and dangerous cases in midwifery, and that I committed my observations on the subject to paper not only under a conviction of their practical utility, but certainly also under an impression that my suggestions were original. Not long after the first edition was at press, indeed before the first sheet was printed (1776), Levret's dissertation on this subject fell into my hands; and in a note I referred to it as additional testimony in proof of the placenta in these cases being originally attached to the os uteri. I have been led into this little detail, because it has been suggested that I borrowed my theory from Levret. After remarking the gross folly I should have been guilty of in quoting Levret, had I furtively adopted his opinions, it will, I trust, be sufficient for me unequivocally to declare, that my original ideas on the subject were derived solely from my own personal observation and experience; and that, having previously *neither read nor heard of the placenta being ever fixed to the os uteri*, the knowledge of such a circumstance, derived as before observed, came to me, and impressed me as a discovery. I was certainly afterwards struck with the coincidence of the sentiments of Levret and myself on the subject — with the similarity of our practical deductions, and, allowing for the difference of language, even with the sameness of our expressions. But is it extraordinary that two persons should have deduced the same conclusions from similar premises? In the present instance, where the inferences are so obvious, the contrary, as I have before remarked, is surely the more extraordinary, that other writers who have noticed the fact should not have deduced them; that Dionis, Mauriceau, Deventer, La Motte, Portal, Ruysch, Giffard, Smellie, Hunter, &c., whom I have quoted as having found the placenta at the os uteri, should not practically have applied it, than that Levret or myself should have done it. I am further not reluctant to acknowledge that, after reading Levret's dissertation, I felt less entitled to the claim of absolute originality on the subject; and I now rest perfectly satisfied to divide with him the credit arising from the mere circumstance of communicating a new physiological fact." "Levret's facts, moreover, though they proved that the placenta might be originally attached to the os uteri (and a single instance would establish this), were scarcely sufficient to prove the frequency of its occurrence, from which alone arises the necessity of practically attending to it in every case of hemorrhage. His observations (perhaps even more creditable to him for being founded on such scanty materials), were derived from four cases only, but of these but two was under his immediate cognizance; whereas, in the first edition of this essay, my opinions were supported by 36 detailed cases, in 13 of which the placenta was found at the os uteri: and in the fourth edition this number was increased to 106, 43 of which were produced by this peculiar original situation of the placenta."

In the Maternité at Paris, from the year 1797 to 1811, during which period 20,357 women were delivered, Madame Boivin reports there were 8 cases of placental presentation, being in the proportion of 1 in 2554. During six years and nine months 10,387 cases of labour occurred in the Dublin Lying-in Hospital, under the mastership of Dr. Joseph Clarke, and there were 4 cases of placental presentation, or 1 in 2596. One of these proved fatal. Dr. Collins met with 11 cases of placental presentation in 16,654 labours; being nearly in the proportion of 1 to 1492. Eight of the children presented naturally, four of which were turned; one was delivered by the natural efforts; one with the forceps; and in the other two the head was lessened. Of the remaining three, two presented with the feet, and one with the breech. Six of the children were born alive. Of the five still-born, two were putrid. Two of the women, where the children were turned, died: all the rest recovered. Dr. Ramsbotham had related 19 cases of placental presentation, eight of which proved fatal. In five, the placenta was only partially adherent to the cervix, and in three the expulsion of the placenta took place before the child. Out of 174 cases of placental presentation recorded by different authors, Dr. Churchill states that 48 proved fatal, or nearly 1 in 3; and that in 85 cases of uterine hemorrhage, where the placenta was at the fundus, 24 proved fatal; the proportions being nearly the same.

I have seen 38 cases of uterine hemorrhage in the latter months of pregnancy from partial or complete attachment of the placenta to the neck of the uterus. Seven of these women died soon after delivery, from the loss of blood they had sustained. One died undelivered, from the first attack, before being seen; one from rupture of the uterus; and five from uterine phlebitis and other forms of uterine inflammation. The subjoined table of these cases will enable you in a very short time to become acquainted with all their most important details.

In the greater number of cases of placental pressentation the discharge of blood takes place spontaneously in the seventh and eighth months of pregnancy, and cannot be referred either to bodily exertion, external violence, nor to any unusual determination to the uterine organs, or congestion of their vessels. The hemorrhage generally comes on suddenly, when the woman is in a state of rest, and the blood continues to flow until faintness or even syncope takes place. It often ceases entirely, and the patient resumes her usual occupations, and has no dread of another attack. But after an interval of several days, and sometimes not before two or three weeks, the flooding is renewed, and perhaps with increased violence, or a constant profuse discharge takes place, and a decided effect is produced upon the constitution, — the pulse becomes rapid and feeble, and the countenance pale. Similar attacks return at longer or shorter intervals, and if delivery be not accomplished by art, sooner .or later death takes place. The first attack of flooding seldom proves fatal, but it sometimes does so; for in the second case related in the table, which occurred in the British Lying-in Hospital, the life of the patient was at once extinguished by a single gush of blood from the uterus. I examined the body after death. The centre of the placenta was over the centre of the os uteri.

When flooding takes place to an alarming extent in the seventh or eighth months of gestation, you ought first to ascertain, by a careful internal examination, whether or not the placenta be situated at the os uteri. It is impossible, from the manner in which the discharge of blood takes place, to be certain of the fact; for there are some cases of hemorrhage from detachment of the placenta from the upper part of the uterus, where the flooding occurs spontaneously, and to as great an extent as in cases where the placenta presents. In some cases I have deen induced, from the symptoms, to believe that the placenta was at the os uteri when it was not. As the treatment and the successful or fatal result of the case will, in a great measure, depend on the correctness of the diagnosis, the examination should be conducted with so much care and circumspection as to leave no room for doubt on the subject. An ordinary examination, with the fore and middle fingers, is generally sufficient to enable us to ascertain the true state of the case, but where the os uteri is very high up, and directed backwards, it becomes requisite to introduce the whole hand within the vagina. The finger should then be passed gently through the os uteri, and, if the placenta adheres to the cervix, it will be distinguished from coagulated blood, the only substance with which it can be confounded, by its firmer, fibrous, vascular structure, and, above all, by its adhering at one part to the uterus, and being separated at another. If you will take the trouble to pass the finger carefully and repeatedly over the uterine surface of a recently expelled placenta, you will never, in actual practice, mistake a placenta at the os uteri for a clot of blood, however firm. In all cases it is requisite to proceed at once to determine by an examination, so carefully conducted as to render a mistake impossible, whether or not the placenta presents — even though the hemorrhage should be slightly renewed by the displacement of the coagula; you cannot be too early acquainted with the precise condition of the patient. You ought, at the same time, to ascertain whether the placenta adheres partially or completely to the cervix uteri, and whether the os uteri is in a condition to admit of the operation of turning being performed.

The operation of turning, which is required in all cases of complete placental presentation, is not necessary in the greater number of cases in which the edge of the placenta passing into the membranes can be distinctly felt through the os uteri. Sometimes there is profuse and dangerous hemorrhage where the placenta does not adhere all round to the neck of the uterus, but only partially. If the os uteri is not much dilated or dilatable, the best practice in these cases is to rupture the membranes, to excite the uterus to contract vigorously, by the binder, ergot, and all other means, and to leave the case to nature: by adopting this treatment the operation of turning may be avoided with advantage in the greater number of cases of partial placental presentation. But, if the hemorrhage is profuse, has returned at different intervals, and a great quantity has been lost, and the constitution is really affected, it is the safest practice at once, if the orifice of the uterus is in a condition to allow the hand to pass without difficulty, to deliver by turning the child.

Where the placental presentation is complete, the operation of turning should be performed, in all cases, as soon as the orifice of the uterus is so much dilated or dilatable as to allow the hand to be introduced without the employment of much force. It is seldom safe to attempt to deliver by turning before the os uteri is so far dilated that you can easily introduce the points of the four fingers and thumb within it: however soft and relaxed it may be, until dilatation has commenced, and proceeded so far, I am convinced there are very few cases in which the operation of turning will be required, or completed without the risk of inflicting some injury on the os uteri. This is a point of the greatest practical importance, but I do not know in what manner to communicate to you, in words, a more clear and definite idea of the grounds upon which you ought to proceed.

In every case, before attempting to turn, make a most careful examination of the os uteri, and endeavour, from the degree of dilatation, and the thinness and softness of the orifice, to form a correct judgment upon this point, before interfering, for the hemorrhage will be renewed if the attempt is unsuccessful, and the patient will be placed in a worse condition than she was before. When you have resolved to turn, let the patient lie on the left side, with the pelvis close to the edge of the bed, and introduce the right hand X into the vagina as before described, and then pass the fingers and hand gently and slowly in a conical form through the os uteri, giving it time to dilate, and onward into the cavity between the detached portion of the placenta and the uterus: then force the fingers through the membranes, grasp both feet, and bring them down into the vagina, and *slowly* extract the child as in the cases

X Meigs advises to use the left hand.

of nates presentation, and do not afterwards be in a hurry to remove the placenta, unless it is wholly detached and lying in the upper part of the vagina. This operation is easily and speedily performed when the os uteri is widely dilated and dilatable. It is, however, a great exaggeration of the facility with which turning may be accomplished in these cases, to represent it as a very simple process — like putting the hand into the coat-pocket and pulling out your handkerchief. At the best it is a dangerous operation, and you can never tell with certainty whether or not the patient will recover after its performance, however easily it may have been effected.

But there is not unfrequently most profuse and alarming flooding from complete placental presentation, where the os uteri is so thick, rigid, and undilatable, that it is impossible to introduce the hand into the uterus without producing certain mischief. In 13 of the 36 cases contained in the following table the os uteri was rigid and undilatable. The tampon or plug has no power to restrain the hemorrhage in such cases, nor do I know of any other means — either cold, quietness, or opium — which effectually have, and it is sometimes absolutely necessary under such circumstances to deliver by turning, before the hand can possibly be introduced into the uterus without producing fatal contusion or laceration of the part. I have found in several of these cases, however, that the delivery may be safely accomplished by merely passing the hand into the vagina, and afterwards the fore and middle fingers between the uterus and detached portion of the placenta, grasping with them the feet, which are generally situated near the os uteri, and drawing down the inferior extremities into the vagina, and delivering. I know that the inferior extremities may often be brought down in this way where it is impossible to pass the whole hand through the os uteri.

A TABULAR VIEW

OF

THIRTY-EIGHT CASES OF UTERINE HEMORRHAGE FROM PLACENTAL PRESENTATION.

No.	Date.	Symptoms and Treatment.	Result.
1	July 22, 1828	Profuse hemorrhage seven days before labour; placenta adhered to neck of uterus all round; rigidity of os uteri. Turning attempted, but could not be performed. The plug employed for several days, but much blood lost. Turning at last accomplished with little difficulty, but followed by alarming exhaustion	Died 18 days after delivery; extensive inflammation of pleura with gangrene of inferior lobe of left lung, and inflammation of left spermatic vein.
2	—— 1828	Sudden profuse hemorrhage at ninth month, continuing till death, which took place suddenly. No accident or uneasy sensation before discharge commenced. Placenta found on dissection adhering around cervix uteri. Died undelivered, before she could receive any assistance, or was seen by any medical practitioner	Died.
3	Oct. 24, 1829	Hemorrhage at seventh and a half month. Thirty-six hours before medical aid was procured; placenta found hanging out of orifice of uterus. Operation of turning proposed, but the patient would not allow it to be performed. Violent flooding for several hours. Placenta and fœtus expelled without assistance; great exhaustion	Recovered.
4	Feb. 8, 1830	Profuse hemorrhage in the seventh month; placenta protruding through orifice of uterus. Placenta extracted, and a dead child followed. Great hemorrhage; insensibility and coldness of extremities, &c.	Recovered.
5	Mar. 24, 1835	Hemorrhage; exhaustion; os uteri soft and widely dilated. Hand passed into uterus through opening made by detachment of placenta from cervix uteri; membranes ruptured and turning effected: child dead	Recovered.
6	March, 1835	Hemorrhage during eighth month; placenta attached to lower part of uterus; usual effects of loss of blood; os uteri widely dilated, and placenta hanging partially through it. Turning easily performed; child dead	Recovered.

No.	Date.	Symptoms and Treatment.	Result.
7	April 26, 1835	Hemorrhage at seventh and a half month; oozing of blood for fourteen days, which came on without any accident or injury, when in bed, preceded by no uneasiness; orifice of uterus hard and undilatable; hand unable to be introduced. Hemorrhage checked for two days by cold and rest; sudden renewal of flooding to a great extent. Syncope at last came on, and turning was easily accomplished: child alive	Died in a few days from the effects of loss of blood.
8	Oct. 7, 1835	Hemorrhage in the seventh month; slight oozing of blood for three weeks, at the end of which period several pints were suddenly discharged; pulse imperceptible; extremities cold; respiration feeble; os uteri very rigid, and little dilated. Repeated attempts to turn; a foot at last grasped, and the operation completed with difficulty; hemorrhage arrested. Exhaustion, rigors, and death threatened	Recovered.
9	Oct. 18, 1835	Profuse hemorrhage in the eighth month; placenta found hanging out of os uteri; hand could not be introduced to turn the child, in consequence of rigidity of os uteri and distortion of the pelvis; hemorrhage continued. Head felt above brim of pelvis. Craniotomy performed, and delivery completed after four hours with great difficulty	Recovered.
10	Oct. 28, 1835	Hemorrhage during seventh month, occurring spontaneously twice in fourteen days; renewed at last with violence; placenta found protruding through os uteri. Traction made on placenta, and the contents of the uterus were expelled entire. Hemorrhage ceased after cold being applied	Recovered.
11	Oct. 30, 1835	Slight hemorrhage, lasting fourteen days, terminating with an immense discharge; placenta partially adherent to cervix; syncope; os uteri rigid, dilated to the size of a crown piece; placenta detached at posterior part of neck of uterus. Membranes felt: head presented. Membranes ruptured: hemorrhage arrested. Child expelled by the natural efforts	Recovered; sanguineous discharge from uterus for months.
12	Nov. 10, 1835	Profuse hemorrhage during eighth month; first discharge on the 4th of November; placenta presented, and adhered all round to cervix uteri; vagina filled with coagula; insensibility and cold extremities; os uteri considerably dilated, Placenta separated from uterus with the fingers, and turning performed. Hemorrhage after the expulsion of placenta; pulse imperceptible; respiration hurried; lips and hands livid. Stimulants ineffectual	Died two hours after delivery.
13	Nov. 17, 1835	Hemorrhage in the eighth month, after great bodily exertion; placenta detached from orifice of uterus; os uteri rigid and slightly patulous. Rest and cold employed for a day, after which period the membranes were ruptured; head descended between placenta and uterus, and delivery was completed without hemorrhage	Died at a remote period from deep-seated uterine inflammation.
14	Mar. 24, 1836	Hemorrhage in seventh month, continuing for several days; exhaustion at last taking place after a discharge of blood. Placenta felt at posterior part of cervix uteri; membranes felt at anterior part. Membranes ruptured: hemorrhage ceased. Labour did not come on for two days. Uterine phlebitis	Died April 11, from phlebitis and inflammation of the lungs.

15	Dec. 3, 1836	Hemorrhage in seventh month. Ergot of rye had been repeatedly administered without presenting part being known. Os uteri widely dilated; placenta found adhering to the posterior part of cervix uteri. Turning performed in five minutes with ease; child dead. No hemorrhage followed	Died ten days after from inflammation of the veins of the uterus.
16	Dec. 20, 1836	Repeated attacks of hemorrhage during the eighth month; placenta felt presenting through os uteri; great exhaustion; rigidity. Hemorrhage controlled for some days. Turning at last performed: child alive. Recovered for two hours	Died suddenly, two hours after delivery.
17	Dec. 25, 1836	Severe hemorrhage after a fit of coughing; pulse rapid and feeble; no uterine contractions; os uteri soft and dilatable; placenta detached, and a portion hanging out of orifice of uterus. Turning easily performed: child born alive. Placenta allowed to remain for some time to act as a plug	Recovered.
18	Mar. 10, 1837	Hemorrhage in the sixth month, occurring at intervals during four weeks. Ergot of rye given without the presenting part being ascertained; os uteri soft and widely dilated, and a portion of the detached placenta hanging through it. Turning performed: child alive	Recovered.
19	July 19, 1837	Hemorrhage at intervals, for several days, during ninth month; extreme debility; os uteri slightly dilated. Hand passed into the uterus: membranes ruptured, and a foot brought down, and the delivery easily accomplished. No hemorrhage followed	Recovered after severe uterine and crural phlebitis.
20	Dec. 27, 1837	Hemorrhage during the ninth month; os uteri slightly dilated; partial placental presentation; discharge of blood slight; no constitutional symptoms present. Os uteri became widely dilated at end of twenty-four hours: edge of placenta felt. Membranes were ruptured: head descended. Child born alive by natural efforts	Recovered.
21	May 12, 1838	Hemorrhage, lasting three days; orifice of uterus at commencement of attack high up, and slightly dilated; by end of third day largely dilated; a great discharge of blood at last took place. Turning easily performed: child dead	Recovered.
22	June 11, 1838	Flooding during the seventh month, lasting at intervals for five days, and producing fits of syncope. Turning performed: hemorrhage arrested. Faintness, cold extremities, and exhaustion	Died at a remote period from uterine phlebitis.
23	Jan. 12, 1839	Hemorrhage at eighth and a half month; three attacks during one month, at long intervals; renewed spontaneously with the utmost violence; os uteri thick and rigid; vagina filled with coagula; placenta adhering all round to inner surface of cervix. Artificial dilatation attempted, but without success. Membranes about to be ruptured, when two fingers were passed between the placenta and uterus: a foot was felt and brought down into vagina, and turning accomplished with great difficulty, from the orifice of uterus firmly grasping like a rope the neck of the child. Labour in half an hour, completed by artificial dilatation; but the hemorrhage continued, in spite of all treatment, and complete exhaustion followed	Died half an hour after delivery, from loss of blood.

No.	Date.	Symptoms and Treatment.	Result.
24	Feb. 1839	Hemorrhage at seventh and a half month; placenta adhering all round to neck of uterus; os uteri rigid and undilatable, being the size of a crown piece; head presenting; hemorrhage arrested for a time by cold, but renewed. Fingers were pushed through the placenta and the membranes ruptured: head descended, and hemorrhage ceased; os uteri continued rigid, so that perforation could not be employed; labour lasted during the day, when exhaustion came on, without further loss of blood. Craniotomy at last performed, and extraction completed with great difficulty, in consequence of the extreme rigidity; complete exhaustion.	Died soon after delivery, from loss of blood.
25	July 30, 1839	Flooding during the seventh month; placenta adhered to neck of uterus; os uteri thick and rigid; hemorrhage profuse; syncope. The hand could not be passed into uterus; two fingers were introduced within its orifice, and a foot easily brought down before the membranes were ruptured: turning easily performed; hemorrhage arrested; child dead	Recovered.
26	Feb. 22, 1840	Profuse hemorrhage at the five and a half month; repeated at the seventh month, when it lasted three days; placenta entirely situate over orifice of uterus, and adhering to the cervix. Hand thrust through placenta, and delivery completed by turning; head extracted with great difficulty: exhaustion from time of delivery. (When called to this patient, Dr. Lee found her dead.) — *Post-mortem examination:* extensive laceration of muscular and mucous coats of cervix uteri on the left side; a superficial rent on right side; placenta had adhered to whole circumference of cervix uteri; pelvis distorted to a high degree	Died an hour and a half after delivery.
27	Oct. 9, 1840	Profuse hemorrhage in the seventh month; experienced for days previously a sense of weight and uneasiness; edge of placenta felt through orifice of uterus. Membranes ruptured, which induced strong labour pains; hemorrhage was arrested: child expelled dead in an hour and a half	Recovered.
28	April 7, 1841	Uterine hemorrhage during seventh month; repeated twice at short intervals during the eighth month; an immense discharge at last took place, producing syncope; os uteri thick, high up, and but little dilated; the whole hand could not be passed into the uterus; placenta adhering all round to cervix uteri. The fore and middle finger introduced between placenta and uterus: a foot brought down with great difficulty; head extracted after great exertion, os uteri having grasped the child with great force	Recovered.
29	May 19, 1841	Two attacks of uterine hemorrhage during the seventh month, at intervals of three weeks, the last producing syncope; os uteri dilated to size of a crown piece; placenta presenting, and adhering nearly all round to cervix uteri. Turning accomplished in quarter of an hour by another practitioner; convulsions came on during extraction of child, which continued until her death	Died four hours after delivery, from convulsions.
30	May 26, 1841	Spontaneous hemorrhage in the eighth month; had several attacks, but not very profuse; os uteri, rigid, high up, and dilated to the size of a half-crown; placenta adhered everywhere to neck of uterus. Child turned without difficulty; hemorrhage arrested	Recovered.

31	Nov. 10, 1841	Hemorrhage in the ninth month; placenta detached, and a large portion hanging out of orifice of the uterus; syncope; hemorrhage arrested for a time. Membranes at last gave way, and the child was born alive, without artificial assistance	Recovered.
32	Nov. 13, 1841	Profuse hemorrhage in the eighth month; os uteri high up, and directed backward, thick, but dilatable. Finger with difficulty introduced within it: placenta found adhering to cervix uteri. Turning performed with ease: child alive	Recovered.
33	Jan. 5, 1842	Hemorrhage at end of seventh month; os uteri dilated to size of a half-crown; not rigid; placenta adhered all round to cervix uteri. Hand passed into uterus, and a foot brought down without difficulty: nates firmly grasped by os uteri	Recovered.
34	April 15, 1842	Hemorrhage during sixth month; placenta partially adherent to cervix. Membranes were ruptured, and a dead child expelled, without turning being employed: hemorrhage arrested	Recovered.
35	July, 1842	Hemorrhage at beginning of eighth month; renewed after an interval of a month with great severity; placenta adherent all round to cervix; os uteri dilated to the size of a half-crown, thin and dilatable. Turning easily performed by another practitioner: syncope, with the usual symptoms of great loss of blood, followed, from which she never recovered	Died four hours after delivery.
36	Sept. 7, 1843	Hemorrhage first commenced during the seventh month, but arrested; renewed after six weeks, with syncope; os uteri dilated to the size of a half-crown; placenta adhered so firmly to cervix uteri, that the fingers were obliged to be forced through its structure, and the operation of turning performed: hemorrhage ceased, and delivery was easily accomplished, followed by great faintness	Recovered.
37	Oct. 15, 1842	Hemorrhage in eighth month; placenta adhering all round; hemorrhage at intervals for two or three weeks; os uteri little dilated, but dilatable. Immediately passed up the hand into the uterus, brought down the feet, and turned: child dead	Recovered.
38	Feb. 24, 1843	Profuse discharge for three weeks in the seventh month; placenta adhering all round; os uteri dilated to size of a crown piece, dilatable. Passed the whole hand into the vagina; finding some difficulty in introducing it through the os uteri, passed the fore and middle finger between the anterior part of the uterus and placenta: ruptured the membranes; grasped a foot, and easily extracted the child alive	Recovered.

LECTURE XXXIV.

ON LABOURS COMPLICATED WITH UTERINE HEMORRHAGE, OCCASIONED BY DETACHMENT OF THE PLACENTA FROM THE SUPERIOR PART OF THE UTERUS.

Flooding may take place in the latter months of pregnancy, and during labour, where the placenta does not adhere to the neck of the uterus, but to the body or the fundus, and is detached by some external or internal cause. The separation of the placenta from the upper part of the uterus may be produced by violence, as blows, falls, pressure over the hypogastrium, and shocks of various kinds; but it arises much more frequently from internal causes, of which, morbid states of the placenta, and twisting of the umbilical cord once or oftener around the neck of the child, are the most common and obvious. This variety of hemorrhage, though usually termed accidental, can rarely, however, be referred to accident. Sometimes the flooding occurs to a great extent without any assignable cause; a large portion or the whole of the placenta, when in a healthy condition, being suddenly detached from the uterus, when the patient has been exposed to no external accident, or injury of any kind, and when no symptoms of increased determination of blood to the uterus have preceded the attack. When this happens a large quantity of blood is poured out between the placenta and uterus, a small portion of which only at the time usually escapes from the vagina, to indicate what is going on within the uterus. There may be a great internal hemorrhage, accompanied with the ordinary constitutional effects resulting from loss of blood — as faintness, sickness, or vomiting, coldness of the extremities, rapid feeble pulse, hurried breathing; when there is little or no discharge from the vagina to excite alarm, or to point out the source of danger, when it is extreme. It is from the general symptoms of exhaustion, and by the disagreeable sense of uneasiness, weight, or distension of the uterus, experienced, and not from the quantity of blood which appears externally in these cases, that we are led to discover the true state of the patient — to suspect that internal hemorrhage is going on. But much more frequently only a small portion of the placenta is at first detached, and the greater part of the blood which is extravasated between it and the uterus separates the membranes, and descends by its weight to the orifice, and escapes through the vagina. In all cases, however, of uterine hemorrhage in the latter months, the danger cannot be so accurately estimated by the quantity of blood which appears externally, as by the general symptoms. The portion of placenta which is detached, never reunites to the uterus, but when expelled it is usually seen covered with a dark coagulum adhering to the uterine surface.

When the blood escapes in small quantity, and there are no labour pains present, and no disposition in the os uteri to dilate, and the constitutional powers are not impaired, an attempt should be made to prevent a return of the discharge, and the occurrence of labour pains. For this purpose, if the pulse is full and frequent, some blood may be taken from the arm, and the patient should be kept in the horizontal position, surrounded by cool air, cold applications made over the hypogastrium, and acetate of lead and opium, mineral acids, and other remedies that diminish the force of the circulation and promote the coagulation of the blood, should be taken internally. The plug is here totally inadmissible; it can only convert an external into an internal hemorrhage. But where the flooding occurs at first profusely, and is renewed even in a moderate degree, in spite of our efforts to check it, the continuance of pregnancy to the full period cannot be expected; it will be of no avail to bleed and administer internal remedies, except for the purpose of checking the discharge, and thus averting the immediate danger until the uterus is emptied of its contents.

The operation of turning, which is required in all cases of complete placental presentation, is rarely necessary in uterine hemorrhage where the membranes are felt at the orifice. In a great proportion of these cases, where, on making an examination, you can feel the smooth membranes extending across the neck of the uterus, the flooding will be arrested, and the labour safely completed, if the membranes are ruptured, the liquor amnii discharged, and contractions of the uterus excited by gentle dilatation of the orifice, and other appropriate means. The only cases in which this treatment fails are those in which it has not been had recourse to sufficiently early, or where the whole or a large portion of the placenta has been suddenly separated from the uterus, and a great internal hemorrhage has taken place. The uterus will not contract effectually in these cases after the membranes have been ruptured; the pains, instead of becoming stronger, become more and more feeble, return at longer intervals, and during these the blood flows more profusely, and death would take place before delivery, if the child were not extracted by the forceps, crotchet, or by the operation of turning. In all cases, then, of uterine hemorrhage in the latter months of pregnancy, and in the first stage of labour, where the placenta does not present, and the quantity of blood discharged is so great as to render delivery necessary, where it appears improbable that the pregnancy can go on longer with safety, or to the end of the ninth month, rupture the membrane with the nail of the forefinger of the right hand, evacuate the liquor amnii by holding up the head of the child, dilate very gently the os uteri with the fore and middle fingers expanded, and occasionally make pressure with the fingers around the whole orifice; apply the binder, give ergot and stimulants, and the uterus will, in all probability, contract upon its contents, and expel them without further trouble. If the hemorrhage should, however, continue after the employment of these means, delivery must be accomplished by the forceps, craniotomy, or by turning, according to the peculiarities of the case. In women who are liable to attacks of flooding after the expulsion of the child or placenta, rupture the membranes at the commencement of labour, even before the os uteri is much dilated, if the presentation is natural, and you will often succeed in entirely preventing hemorrhage.

In the following table of cases of uterine hemorrhage in the latter months of pregnancy (see pp. 376–380), occasioned by detachment of the placenta from the upper part of the uterus, four of the women died soon after from loss of blood, and one in several days, from inflammation of the uterus. Twenty of these occurred in the ninth month of pregnancy, or at the commencement of labour: 14 in the eighth; 2 in the seventh; and 1 in the sixth month.

It is to Mauriceau that all the honour must be awarded, and not to Puzos, or to any subsequent writer, of having first pointed out the efficacy of rupturing the membranes, where the placenta does not present. He was undoubtedly the first who fully established the important practical distinction between the cases of uterine hemorrhage in which the placenta is detached to the neck of the uterus, and those in which it has adhered to the fundus or body, and been separated by some external or internal cause. Guillemeau, as you already know, recommended immediate delivery by turning in cases of placental presentation, and in those cases of uterine hemorrhage in which the placenta did not present, but had been detached by some accidental cause from the upper part of the uterus, he had likewise recourse to artificial delivery, and for the knowledge of this practice he states that he was indebted to Ambrose Paré. The same plan of treatment was therefore employed by him in all the varieties of uterine hemorrhage in the latter months, and in the work of Portal there is no proof, as far as I can discover, that *he* made any difference in the treatment of cases of unavoidable and accidental uterine hemorrhage. Mauriceau has recorded the history of 37 cases of uterine hemorrhage, in which the placenta did not present, but had adhered to the upper part of the uterus, and been accidentally detached. Twenty-one of these cases occurred before the year 1682, and in almost all of them he delivered artificially, by passing the hand into the uterus, rupturing the membranes, and turning the child. The treatment he employed, therefore, in these cases, was precisely the same as that which he had employed in the seventeen cases of placental presentation alluded to in the last lecture, and differed in no respect from that recommended by Paré and Guillemeau. But in the year 1682, his Case 307 occurred, and in the treatment of this he deviated from his former practice, and instead of delivering immediately by turning the child, he ruptured the membranes, and left the labour to nature, with the happiest result. Mauriceau gives no account of the circumstances which induced him to make this important change in the treatment of cases in which the placenta did not present, and to adopt that method of treatment which was at a later period so strongly recommended by Puzos, and considered by himself, and almost all later authors, as his own discovery. From a case of accidental uterine hemorrhage which occurred in 1685, and another in July, 1686, where Mauriceau had recourse to the operation of turning, it is probable he was not convinced of its perfect safety before the month of August, 1686. His Case 450 then occurred, and the pains being feeble, and the hemorrhage great, he ruptured the membranes, by which means the infant, he says, could advance into the passage *without pushing the membranes before it, and further detaching the placenta, as it had previously done, and increasing the hemorrhage.* The liquor amnii having escaped after the rupture of the membranes, the labour pains, which before had been feeble and inefficient, speedily became strong, and the patient was happily delivered of a living child in half an hour, and the mother recovered favourably. Case 429 occurred in 1687, and in this also he ruptured the membranes, which, he observes, should be done in all similar cases. Case 480 and 496 occurred also in 1687, and the membranes were ruptured in both, and the labour left to nature. The reason of this practice is again clearly stated in the history of the last of these cases. Case No. 542 took place in 1688. The patient was in the seventh month of pregnancy, and the feet presented, and he ruptured the membranes and extracted the child by the feet. In Case 585, which occurred in 1690, he also ruptured the membranes as soon as they became tense, and again states the ground upon which he did this. In Case No. 624, which happened 1691, the hemorrhage took place in the eighth month of pregnancy, and here he also ruptured the membranes with the happiest effect. Case No. 633 also occurred in 1691. The patient was in the seventh month, and there was both external and internal uterine hemorrhage. He states that the membranes were ruptured with the happiest result. The same practice was adopted, and with a similar effect, in Case 633.

Mauriceau's 52d aphorism proves that he was likewise fully aware of the importance of rupturing the membranes in the first stage of labour, when hemorrhage occurred.

In the second volume of the Memoirs of the Royal Academy of Surgery (1743), Puzos recommended puncturing the membranes, as Mauriceau had done, gently dilating the os uteri with the fingers to excite contractions, and leaving the expulsion of the child to nature. This, he says, is a safe and middle course, between natural labour and artificial delivery by turning, which he knew was always accompanied with danger, and often followed by fatal consequences. Giffard, Chapman, Rœderer, and Levret, appear to have placed little or no reliance on the practice of rupturing the membranes in cases of accidental uterine hemorrhage. Smellie was, however, fully aware of its importance, and likewise knew that the practice did not invariably succeed, as you might infer from the statements made by other writers.

"On the first appearance of flooding, the patient ought immediately to be blooded to the amount of eight or twelve ounces, and venesection repeated occasionally, according to the strength of the constitution and emergency of the case. She ought to be confined to her bed, and be rather cool than warm; if costive, an emollient clyster must be injected, in order to dissolve the hardened fæces, that they may be expelled easily without straining; internally, emulsion with nitre must be used, and mixtures of the tinct. rosar. rub., acidulated with spirit of vitriol, as the cooling or restringent method shall seem to be indicated; but above all things, opiates must be administered, to procure rest, and quiet the uneasy apprehensions of the mind. For her diet let her use panada, weak broth, and rice gruel; she may drink water in which a red hot iron has been several times quenched, mixed with a small proportion of red burnt wine. She must abstain from all the high-seasoned foods, and even flesh meats or strong broths, that will enrich the blood too fast and quicken the circulation. But if, notwithstanding this regimen, the flooding still continue and increase, so that the patient become faint and low with loss of blood, we must without further delay attempt to deliver her, as in book iii., chap. iv., sec. 3, though this is seldom practicable except in the last months of pregnancy; and this will be the easier performed the nearer she is to her full time, unless labour pains shall have assisted or begun a dilatation of the os internum. It is happy for the woman in this case, when she is so near the full time, that she may be sustained till labour is brought on; and this may be promoted, if the head presents, by gently stretching the mouth of the womb, which being sufficiently opened, the membranes must be broke, so that, the waters being evacuated, *the uterus contracts*. the *flooding is restrained*, and the patient safely delivered. At any rate, if the hemorrhage return again with great violence, there is no other remedy than that of delivering with all expedition, according to the method described in book iii., chap. iv.," &c. "If in time of flooding she is seized with labour pains," adds Smellie, "or if by every now and then stretching with your finger the os internum, you bring on labour, by which either the membranes or head of the child is pushed down, and opens the os internum, the membranes ought to be broke, so that some of the waters may be discharged, and the uterus may contract and squeeze down the fœtus. This may be done sooner in those women who have had children formerly, than in such as have not been in labour before. If, notwithstanding this expedient, the flooding still continues, and the child is not likely to be soon delivered, it must be turned immediately; or, if the head is in the pelvis, delivered with the forceps; but if neither of these two methods will succeed, on account of the narrowness of the pelvis or the bigness of the head, this last must be opened, and delivered with the crotchet. In all these cases let the parts be dilated slowly and by intervals, in order to prevent laceration."

The following is the account of the practice recommended by

Dr. Rigby, of Norwich, in cases of accidental uterine hemorrhage, "If, on the contrary, it be clear, from a careful examination of the uterus, made in the way above mentioned, that the placenta is not at the mouth of it, and that the coming on, or increase of labour will not of necessity increase the discharge, provided it be not very profuse (for let it be remembered that I am supposing the examination to be made early, and before any very considerable quantity of blood has been lost), it certainly will be proper to wait for the natural pains, and in the meantime to use such methods as are likely to restrain the flooding; which are, admitting a free circulation of cool air into the room, keeping the patient in a horizontal position, giving her anodynes, tinct. rosar., &c., and supplying her frequently with such cool and simple nutritious drinks as will support her, without quickening the circulation. From pursuing this method it will often happen that the discharge goes off entirely; and if the woman be not arrived at her full term, and she be kept very still and calm, that it does not return before labour comes on; but if it should continue, or return frequently, it will be right, if possible, to bring the uterus into a state of contraction, by exciting some pain, which may often be done by gently irritating the os uteri with the finger: if this succeed, and the mouth of the uterus be thereby so far dilated that the distended membranes may be felt, they must immediately be pierced by passing a probe along the finger, as upon the discharge of water thus produced the womb necessarily contracts to a certain degree, and the flooding proportionably abates; this is for the most part soon succeeded by slight pains, which, if the child present fair, have very soon an effect upon it, and push it down. But if, notwithstanding the mode of treatment above recommended, the discharge should not lessen, if the evacuating the waters should not abate it, and if, moreover, labour pains sufficient for expelling the child should not succeed, and the flooding should still increase, so as to endanger the life of the patient, I should imagine it hardly necessary to say, that even in this case, as well as when the placenta is fixed to the os uteri, the only certain method of stopping it should be used, namely, the delivery of the child by turning; for though I have never yet met with a case that, under such circumstances, has required it, and believe such very rarely happens, yet I would not be supposed to say such a one cannot occur, as the separation of the placenta may, for instance, be produced by such violence done to the abdomen, and the hemorrhage may be so profuse, that nothing but a speedy delivery by art will put a stop to it; I only mean, that when we are called in early to flooding cases, if we judge only by the quantity of blood that has been lost, which may be small, and the present strength of the woman, which may be considerable, we must frequently be deceived in our judgment of the cases, and be in danger of using a wrong method of treatment, but that the knowledge of the causes which produce them will, in the one case, for the most part justify our waiting, and, in the other, will invariably prove the propriety of turning the child."

Of the 106 cases of uterine hemorrhage related by Dr. Rigby, of Norwich, he states that 64 were owing to a separation of the placenta from some accidental cause. Of these, he says, "it appears that though many were very alarming cases, as the patients lost large quantities of blood, and were extremely faint, *not one proved fatal, not one but terminated safely, by waiting for the efforts of nature to expel the contents of the womb.*" Dr. John Ramsbotham relates sixteen cases of accidental uterine hemorrhage, seven of which proved fatal. "Ten cases of accidental hemorrhage," says Dr. Collins, "occurred in the Dublin Lying-in Hospital during Dr. Clarke's residence. Four had delivery forced, of whom one died. One had a defective pelvis; the head was perforated, and the mother died. One had a cross presentation; the fœtus was turned, and the mother died. Two had the membranes ruptured at an early stage of the labour; both recovered. Two were left entirely to the efforts of nature; one died. Hence it is evident, Dr. Clarke observes, that of ten cases, four proved fatal under very different modes of treatment, which result is entirely at variance with Dr. Rigby's experience." Thirteen cases of accidental uterine hemorrhage occurred in the same hospital, during the residence of Dr. Collins as master; in four of which the membranes were successfully ruptured; three were delivered by the natural efforts; three by the crotchet; two of the children were turned, and in one the feet presented; one only of the children was born alive; four were putrid. Two of the thirteen women died; one where the child was turned, and one where the head was lessened. "In my own practice," observes Dr. Merriman, "upwards of thirty cases have occurred of accidental hemorrhage during parturition, in which I have adopted the method of rupturing the membranes as a means of lessening or suppressing the flooding, and as yet I have had no reason to be dissatisfied with the plan, for in every instance the discharge has entirely ceased, or has been so much diminished as to secure the safety of the patient; and yet there were some among these patients whose cases, from the profuse hemorrhage, were abundantly alarming." Dr. Merriman has informed me that since the publication of this statement he has witnessed three cases in which the hemorrhage was not arrested by rupturing the membranes. Dr. Hamilton states that during the last thirty years he has met with only two cases where he has adopted this practice, and on both of these occasions he has resorted to it with great reluctance. Except in cases where the os uteri is rigid, and where the operation of turning is opposed by the patient or attendants, he says the practice must be the same as in hemorrhage from the attachment of the placenta over the os uteri; that is, whenever danger threatens, the operation of turning must be had recourse to. "The proposal of M. Puzos," observes Professor Burns, "is very limited in its utility. Its simplicity gave me at first a strong partiality in its favour; but I soon found cause to alter my opinion. I consider that we are only warranted in trusting to it in those slighter cases which would almost do well without it. I must not, however, conceal, that many eminent men are still favourable to the plan, yet, so far as may be judged of by cases recorded by these high authorities, a larger proportion of women die in this species of hemorrhage than in that where the placenta is attached to the cervix uteri."

If you compare the preceding with the following table, you will see how much greater the danger is, both immediate and remote, when the placenta presents, and when it does not. I cannot avoid expressing my entire dissent from the doctrines inculcated in the following passage by Dr. Burns, and repeating what has already been stated, that in all cases of uterine hemorrhage in the latter months of pregnancy, and first stage of labour, where the discharge is great, that the plug is inadmissible, and that the best practice is, even if the os uteri is rigid and undilated, and there are no labour pains, to rupture the membranes, evacuate the liquor amnii, and excite the contractions of the uterus, or wait till they commence spontaneously. In no case should an attempt be made to dilate the os uteri with the fingers before the membranes are ruptured.

"The old practitioners," observes Professor Burns, "not aware of the value of the plug, endeavoured to empty the uterus early; but it was uniformly a remark, that those women died who had the os uteri firm and hard. It was the fatal consequence of this practice being sometimes prematurely and rashly resorted to, that suggested to M. Puzos the propriety of puncturing the membranes, and thus endeavouring to excite labour. His reasoning was ingenious; his proposal was, in one respect, an improvement on the practice which then prevailed. The ease of the operation, and its occasional success, recommend it to our notice: but experience has now determined that it cannot be relied on, and that it may be dispensed with. If we use it early, and on the first attack, before any tendency to labour exist, we do not know when the contraction may be established; for even in a healthy uterus when we use it on account of a deformed pelvis, it is sometimes several days before labour be produced. We cannot say what may take place in the interval. The uterus being slacker, the hemorrhage is more apt to return, and we may be obliged, after all, to have recourse to other means, particularly to the plug. Now we know that the plug can, without any other operation, safely restrain hemorrhage until the os uteri be in a proper state for delivery. The proposal of M. Puzos, then, is, I apprehend, inadmissible before this time. If, after this, there be occasion to interfere, it is evident that we must desire some interference which can be depended on, both with respect to time and degree. This method can be relied on in neither; for we know not how long it may be of exciting contraction, nor whether it may be able to excite effective contraction after any lapse of time. If it fail, we render delivery more painful, and consequently more dangerous to the mother, and bring the child into hazard."

A TABULAR VIEW
OF
THIRTY-NINE CASES OF SEVERE UTERINE HÆMORRHAGE,
OCCASIONED BY DETACHMENT OF THE PLACENTA FROM THE SUPERIOR PART OF THE UTERUS.

No.	Date.	Symptoms and Treatment.	Result.
1	June 28, 1824	Uterine hemorrhage, with slight pains; many coagula had passed; os uteri slightly dilated, and little affected by the pains. Membranes were immediately ruptured: hemorrhage instantly ceased, and pains became regular; child born alive; hemorrhage followed, but was arrested on removal of placenta	Recovered.
2	Oct. 29, 1827	Hemorrhage at the eighth and a half month, preceded by rigors and pains in region of uterus; much blood lost; os uteri soft, and little dilated; pains produced no sensible effect on it. Membranes were then ruptured: strong pains followed; hemorrhage ceased; head descended. In two hours the pains ceased, and the hemorrhage was renewed; great exhaustion; craniotomy was performed, and the child easily extracted; severe hemorrhage after expulsion of placenta, which was controlled by cold	Died from uterine inflammation.
3	Nov. 5, 1828	Membranes gave way on the 4th, after great fatigue; liquor amnii discharged without pain. On the 5th, faintness came on, with slight oozing of blood from uterus, which continued for some hours, gradually increasing in quantity; exhaustion; os uteri fully dilated; head low in pelvis; insensibility. Forceps applied: hemorrhage more formidable. Labour completed by craniotomy: hemorrhage continued after expulsion of placenta. Hand introduced to make uterus contract, but without success; flow of blood continued in spite of cold, pressure, and stimulants	Died soon after delivery.
4	Mar. 23, 1829	Uterine hemorrhage during the first stage of labour; os uteri widely dilated; pains gone off; membranes unruptured. Finger was immediately forced through membranes, and head held up whilst liquor amnii escaped: stimulants administered: pains became strong, and labour completed without return of hemorrhage	Recovered.
5	April 16, 1829	Severe flooding during eighth month, at intervals; os uteri soft and dilatable; no portion of placenta could be felt; presentation natural. Membranes were then ruptured, the os uteri was dilated, and pressure made with the binder; pains came on for a time, but hemorrhage was renewed with violence; turning easily performed; child born alive; extreme exhaustion, and death threatened.	Recovered.
6	Oct. 24, 1829	Profuse uterine hemorrhage at the end of ninth month, which had commenced two days previously; os uteri fully dilated; head presenting; syncope. Strength was supported by stimulants for a time, but the head not advancing, and the prostration increasing, the forceps was applied, and child extracted: hemorrhage ceased	Recovered.

7	Nov. 18, 1829	Uterine hemorrhage, ninth month, without exertion, after a hearty dinner; sickness; vomiting; syncope; os uteri dilated to size of half-a-crown, thick, and rigid. Membranes were immediately ruptured, and liquor amnii discharged: hemorrhage ceased, and pains became strong. In an hour the hemorrhage returned, and the pains ceased; exhaustion; os uteri still very rigid; turning unable to be performed. Craniotomy employed, and hemorrhage arrested: gradually sank	Died three hours after delivery.
8	May 13, 1830	Uterine hemorrhage at the end of ninth month; pains feeble, and recurring at long intervals; os uteri slightly open, dilatable; no portion of placenta felt. Membranes were immediately ruptured, and the hemorrhage ceased: child born alive	Recovered.
9	May, 1830	Sudden and alarming uterine hemorrhage during the ninth month; faintness, with laborious breathing; os uteri but little dilated; the smooth membranes were felt all round. The membranes were then ruptured with the finger, and the hemorrhage ceased: orifice of uterus gently dilated; child dead; hemorrhage renewed with violence after expulsion of placenta, arrested by cold and stimulants	Recovered.
10	Nov. 29, 1833	Uterine hemorrhage at the eighth month; two quarts of blood had been discharged; great prostration; os uteri dilated to size of a shilling, soft and thin; membranes tense, and felt all round. Membranes were ruptured with the finger, and pains came on, which expelled the child without hemorrhage; the placenta followed in two minutes, accompanied by a great discharge of florid red blood; alarming prostration. Ice into vagina, and stimulants administered.	Recovered.
11	Sept. 4, 1834	Uterine hemorrhage at the ninth month, which had come on after a violent quarrel; os uteri rigid, and slightly dilated; membranes felt all round. Vagina had been plugged, and doses of ergot given without benefit; membranes were immediately ruptured, and all terminated well	Recovered,
12	July 12, 1835	Uterine hemorrhage commencing at the eighth month, but arrested for ten days by cold and rest; os uteri high up, and closed. Hemorrhage again came on, with pain in abdomen, like cramps. Membranes were then ruptured with difficulty, and pressure made over uterus: pains very feeble; strength supported by wine, &c.; child expelled dead, after some hours, by the natural efforts; placenta diseased	Recovered.
13	Nov. 15, 1835	Slight uterine hemorrhage at the seventh and a half month; no great effect produced until Dec. 17, when it was renewed in a formidable manner; vagina filled with coagula; placenta supposed to present; os uteri soft, thin, and dilated to the size of half-a-crown; membranes felt all round, and no placenta at orifice. Membranes ruptured with difficulty: pains came on, and child expelled in two hours; cord around the neck; slight hemorrhage continued; alarming exhaustion for some days.	Recovered.
14	June 4, 1836	Membranes ruptured at the commencement of labour in a patient who had always suffered from hemorrhage: labour completed with but slight discharge. Pressure and cold employed	Recovered.

No.	Date.	Symptoms and Treatment.	Result.
15	Sept. 9, 1836	Uterine hemorrhage at the eighth month, after an accident, which continued nearly a whole day; placenta was thought to have presented, but the membranes were felt all round without placenta; os uteri much dilated. Membranes were ruptured with finger, the binder applied, and the orifice gently dilated: child born dead, with cord twisted tightly around neck; flooding was renewed. Placenta was extracted; hemorrhage arrested by cold and pressure: alarming prostration	Recovered.
16	June 22, 1837	Profuse hemorrhage soon after commencement of labour, which increased when pains went off; great faintness and yawning; no part of the placenta felt; vagina filled with clots. Membranes were then ruptured, and the hemorrhage ceased	Recovered.
17	June 30, 1837	Uterine hemorrhage in the ninth month; os uteri very little dilated; placenta could not be felt. Membranes were immediately ruptured; child was expelled dead, followed by the placenta, which had been wholly detached; syncope followed	Recovered.
18	Aug. 24. 1837	Hemorrhage after a fall during the eighth month; arrested for a week by rest and cold; renewed at which time, when the membranes were ruptured, and the hemorrhage completely arrested.	Recovered.
19	Aug. 1837	Hemorrhage during the first stage of labour. Membranes were ruptured, and the child born alive, without return of hemorrhage	Recovered.
20	Nov. 11, 1837	Uterine hemorrhage near the ninth month; a quart of blood escaped in about one minute; disposition to syncope; os uteri soft, dilatable, but little opened; head presented; no uterine contractions. Cold was applied, and the hemorrhage ceased. Labour came on soon after, and was completed without assistance	Recovered.
21	Nov. 20, 1837	Violent flooding at commencement of ninth month; os uteri soft and but little open; no pains, but a sense of weight in the region of the uterus. Membranes were immediately ruptured, and the hemorrhage ceased: child born dead, with cord twisted around neck	Recovered.
22	Nov. 14, 1838	Uterine hemorrhage at eighth month; os uteri half dilated; membranes unruptured; syncope. Membranes were immediately ruptured: pains became strong; child expelled in an hour, putrid; hemorrhage was arrested; placenta in a diseased condition	Recovered.
23	June 22, 1839	Ninth month — awoke in night with sickness and pain in abdomen, followed by syncope; symptoms supposed to arise from indigestion; soon after hemorrhage took place from uterus; os uteri thick and slightly open. Membranes were then ruptured, and the orifice gently dilated: hemorrhage still increased; alarming exhaustion. Craniotomy was performed: no blood lost after extraction of child; gradually sank; placenta expelled without assistance. — After death, the uterus was found soft and uncontracted; large dark clot filled the cavity; coats of uterus so soft that the fingers could be easily pushed through them; decidua found adhering to part of lining membrane of uterus	Died soon after.

24	Jan. 12, 1840	Profuse hemorrhage in the seventh month; first attack five weeks previously; renewed again after three weeks, and a third time at the present date; os uteri high up, and directed towards sacrum; could feel with difficulty the anterior lip. Continued in this state for three days, when labour pains came on: os uteri dilated; membranes were ruptured, and labour safely completed	Recovered.
25	May 29, 1840	Uterine hemorrhage for three weeks in the sixth month; os uteri slightly dilated; pains feeble; pulse very rapid; membranes felt all round; head presented. Membranes were ruptured with finger: hemorrhage ceased	Recovered.
26	July 5, 1840	Sense of weight preceding uterine hemorrhage, without discharge; blood discharged the next day, which at last became very violent; os uteri dilated to the size of a crown; membranes felt through it. Liquor amnii discharged by rupturing the membranes: hemorrhage ceased; child dead	Recovered.
27	Aug. 31, 1840	Uterine hemorrhage in the eighth month; placenta thought to be adherent to cervix uteri; vagina filled with coagula, but when they were removed, the smooth membranes were felt beyond, but no placenta. Membranes were ruptured: child born dead, without hemorrhage	Recovered.
28	Dec. 1, 1840	Violent flooding at the eighth month; os uteri high up, thick, and little dilated; placenta thought to present; membranes at last felt all round, but no placenta. Membranes were immediately ruptured, and a great quantity of liquor amnii evacuated; strong pains followed; hemorrhage ceased. Labour completed safely in six hours	Recovered.
29	Dec. 18, 1840	Profuse flooding in the first stage of labour, which ceased on the membranes being ruptured; dead child expelled, with funis twisted three times round the neck	Recovered.
30	June 1, 1841	First labour — membranes ruptured spontaneously; funis prolapsed during the night, twelve hours after labour began; a great flooding took place, which produced exhaustion; os uteri half dilated; head above brim. Craniotomy performed: child extracted; many coagula followed; exhaustion succeeded. No further hemorrhage	Died a few hours after delivery.
31	July 1, 1841	Profuse uterine hemorrhage in the eighth month; os uteri dilated to size of half-a-crown; placenta thought to be adherent: os uteri rigid, membranes felt, but no part of placenta; liquor amnii discharged with difficulty. Hemorrhage continued slightly for three hours, when a dead child was expelled, followed by a great discharge of blood	Recovered.
32	Sept. 19, 1841	Dangerous uterine hemorrhage in the seventh month, occurring suddenly, and accompanied with constant vomiting; restlessness and delirium. Membranes were ruptured with difficulty: hemorrhage immediately ceased; dead child soon expelled	Recovered.
33	Nov. 27, 1841	Alarming hemorrhage at ninth month, nearly proving fatal before medical relief was obtained; os uteri dilated; membranes unruptured. Hand was passed into uterus, and turning performed: the whole placenta was detached; an immense gush of blood followed	Extremities became cold; faint; restless; died in half an hour.

No.	Date.	Symptoms and Treatment.	Result.
34	Dec. 8, 1841	Uterine hemorrhage at ninth month, referrible to no accident; child dead. Membranes ruptured with finger; hemorrhage ceased; dead child expelled, with cord twice around neck	Recovered.
35	June 19, 1842	Flooding in the eighth month, which had continued two hours; os uteri widely dilated; membranes unruptured; blood flowed, and uterus not acting. Ergot had been given without effect. Stimulants were given; pains came on; discharge ceased; child expelled alive; funis unusually short	Recovered.
36	July 10, 1842	Sudden and profuse hemorrhage in the eighth month; had been exposed to no accident; pulse quick and feeble; os uteri dilated so as to admit two fingers; head presented. Membranes ruptured with the finger: hemorrhage ceased; two hours, the labour was completed	Recovered.
37	——	Profuse uterine hemorrhage during eighth month, which continued until she fainted and fell down insensible; hemorrhage was arrested for a time, when the pulse got full and frequent, accompanied by a sense of weight in the hypogastrium. V.S.; cold and rest employed: she went to the full period, and was delivered of a living child; hemorrhage took place after the expulsion of the placenta	Recovered.
38	July 15, 1843	A lady in the eighth month, without any accident, seized with sickness at stomach, and a slight oozing of blood; no faintness nor pain; os uteri high up, and undilated. Hemorrhage after six hours, followed by faintness and dilatation of os uteri; membranes ruptured. A dead child soon expelled with the placanta, and a great mass of coagulated blood. Restlessness, vomiting, and great faintness for several hours.	Recovered.
39	July 19, 1843	A lady seized with profuse uterine hemorrhage in the seventh month, with great faintness and feebleness of pulse; os uteri high up; orifice thick, and very little dilated; placenta at first supposed to be presenting; membranes ruptured with great difficulty; pains soon followed, and a living child expelled	Recovered.

LECTURE XXXV.

ON LABOURS COMPLICATED WITH UTERINE HEMORRHAGE AFTER THE DELIVERY OF THE CHILD, AND RETENTION OF THE PLACENTA.

SINCE the last lecture, a case of uterine hemorrhage in the ninth month of pregnancy, occasioned by detachment of the placenta from the superior part of the uterus, which had nearly proved fatal, has occurred to me in private practice. At nine in the morning, a lady, without having been exposed to any accident, or experiencing any uneasy sensation in the region of the uterus, was suddenly alarmed by a gush of blood from the vagina. I saw her soon after, when an oozing of blood continued, but there was no faintness, feebleness of the pulse, or change in the countenance, and no symptoms of labour. The os uteri was so high up, directed so much backward, and so closed, that I could not ascertain by the usual examination whether or not the placenta was presenting. As the operation of turning was impossible, cold applications were made to the parts, an opiate was given to prevent uterine contractions, and the patient kept in the horizontal position in a cool atmosphere. The blood, however, continued to flow, and slight pains, with great faintness and sickness, commenced in four hours. The os uteri was then felt dilated to the size of half-a-crown, and no part of the placenta presenting; the smooth membranes covered the whole cervix uteri. I immediately ruptured them, and held up the head that the liquor amnii might escape, applied a binder firmly around the abdomen, and gave some brandy and water. The pains became more frequent, the hemorrhage ceased, and by compressing the fundus uteri, and gently dilating the orifice, though the faintness became more distressing, the child was expelled dead in about two hours, and no hemorrhage followed. The placenta was found lying loose in the vagina, and on tightening the binder, and removing the after-birth, masses of dark-coloured coagulated blood escaped in such quantity as nearly to fill a wash-hand basin. There had been an internal hemorrhage going on from the first attack of flooding, and though no discharge took place after the expulsion of these coagula the patient remained for several hours in a state of the most dangerous exhaustion, with a pulse scarcely to be felt at the wrist, occasional complete loss of consciousness, restlessness, and severe attacks of retching and vomiting. These symptoms, however, gradually subsided, after the exhibition of a large opiate, and she now recovered in the most favourable manner. In this case the operation of turning, which I am certain could not have been performed without the employment of great force, would have been attended with fatal consequences. The plug, as recommended by Dr. Burns, could have had no effect here in restraining the hemorrhage which was going on within the uterus, and had nearly destroyed the patient; it could not have checked the flooding until the "os uteri was in a proper state for delivery," as he asserts. Had it been possible, at the commencement of the attack, to have ascertained with certainty whether or not the placenta presented, it would have been better practice then to have ruptured the membranes, than delayed doing so for some hours, as it was evident from the first that there could be no safety till the delivery was completed.

ON UTERINE HEMORRHAGE BETWEEN THE DELIVERY OF THE CHILD AND EXPULSION OF THE PLACENTA.

Flooding sometimes occurs in the most dangerous form, immediately after the birth of the child, where the previous stages of labour have been managed in the most judicious manner: where every thing has been done to quiet the action of the heart and arteries; the apartment kept cool: stimulants avoided; voluntary efforts to expel the child discouraged; the binder applied and tightened in the progress of the two first stages of labour, — in a word, where every thing that is possible has been done to prevent the uterus from being suddenly emptied of its contents, and afterwards from contracting in an irregular manner. In some women, in spite of all our care and precautions, a profuse discharge of blood immediately succeeds the delivery of the child, and they would soon die if we did not interfere; and before the placenta was expelled. A large stream of blood flows from the vagina, which collects in handfuls around the nates, thighs, and body of the patient, so that she is literally deluged with it, and soon begins to suffer the usual effects of sudden and great loss of blood. In other cases, a frightful rush of fluid blood, a perfect torrent, issues from the uterus after the birth of the child; the patient becomes in a very short space of time not merely faint, but perfectly unconscious of every thing that is going on around her; she neither sees nor hears any thing. Some women suffer repeatedly from attacks of this description, and those are peculiarly exposed who have been exhausted by very protracted labour. In many other cases the discharge of blood from the uterus after the birth of the child is gradual, in much smaller quantity, and attended with comparatively little danger.

I believe there is no difference of opinion respecting the method of treatment which ought to be adopted in these cases. As the placenta is wholly or partially detached from the uterus, and prevents its regular contraction, and the coagulation of the blood, in the exposed vessels like a foreign body, the placenta must be extracted artificially without delay, and compression of the fundus uteri and all other means actively employed, to cause the uterus to contract in a regular and permanent manner. The principles which ought to guide you here are perfectly obvious; but if you are frightened at the suddenness of the accident, and the appalling loss of blood, you may hesitate to pass up the hand into the uterus, and try by pulling upon the funis to bring away the placenta. If you do so, the uterus may be inverted, or, what is much more probable, the cord will be broken off close to the placenta, and it will be left behind, and the hemorrhage will probably continue till the woman dies, or you procure the assistance of some one properly prepared to act in such a case. Where uterine hemorrhage takes place to any considerable extent after the birth of the child, apply the binder firmly around the abdomen, with a pad of folded napkins under it over the fundus uteri, and proceed immediately to extract the placenta. Take off your coat, put the cord upon the stretch, with your left hand, and pass up the right hand along it into the uterus, dilating the cervix if it is contracted, expanding the fingers to the circumference of the placenta, and pressing the portion of the mass slowly from the inner surface of the uterus, which adheres to it, and extracting it. The placenta in most of these cases is partially adherent to the uterus, when it requires to be extracted, and you must take care to separate this portion cautiously with the fingers before attempting to remove the whole placenta from the uterus. If you grasp with the hand the detached portion, and draw it away, the adherent part will be left behind, and the patient will probably afterwards be destroyed by hemorrhage, or putrefaction of the portion retained. It is not requisite to pass the points of the fingers between the adherent portion of placenta and lining membrane of the uterus, or expose this to be torn, but to press off this portion of the placenta from it with the points of the fingers, as you would a sponge adhering to a rock, which you do not require to touch. No man is thoroughly prepared to undertake the charge of a common midwifery case, who would not hesitate to pass up his hand into the uterus and remove the placenta, whether adherent or detached, if dangerous hemorrhage occurred in the interval between the second and third stages of labour. If you allow any woman to die from hemorrhage at this time without removing the placenta, you will justly be considered incompetent to discharge the duties of an accoucheur, and severely censured.

Sixty-four cases of hemorrhage between the birth of the child and expulsion of the after-birth occurred in the Dublin Lying-in Hospital during the residence of Dr. Collins; in 6 of the 64 the hemorrhage continued after the removal of the placenta. In 45, the hemorrhage was slight, at least not alarming; and in the remaining 19 it was severe. In 17 of the 64, assistance became necessary in the course of the first 15 minutes after the birth of the child; in 3 in 20; in 6 in 30; and in 7 in 45 minutes; in 12 in 1 hour; in 7 in 1½ hour; and in 8 in 2 hours. In 4 cases the time is not noted. In 13 of the 64 cases, the placenta, on the introduction of the hand, was found firmly adherent; in 8 cases the hour-glass, or irregular, contraction was present, and in 43 cases its removal was easily effected. Five of the 64 were premature labours; viz., one at the fifth month; three at the seventh; and one at the eighth month. Seven of the 64 women died; two only from the effects of the hemorrhage; of the other five two died of puerperal fever; one of extensive disease of the vagina with laceration; one of inflammation of the uterus; and one chiefly of disease of the lungs.

At present I am unable to state the exact number of cases of this variety of uterine hemorrhage which I have seen, or present you with a tabular view of them and their results.

ON UTERINE HEMORRHAGE AFTER THE EXPULSION OR EXTRACTION OF THE PLACENTA.

But one of the most dangerous varieties of uterine hemorrhage is that which follows the expulsion of the placenta, or its removal from the uterus by art. Sometimes the blood escapes in great quantities from the uterus immediately after the removal of the placenta, and the pulse ceases at the wrist, and consciousness is entirely lost in a few seconds. There is no symptom before labour has commenced, or during its progress, to warn you of what is about to take place. The child has been safely delivered, the placenta has come away in a short time, and while you are perhaps congratulating yourself on the happy termination of the labour the blood begins to trickle over the bed upon the floor, or the patient suddenly complains of great faintness. In such cases there may be either a want of uterine contraction, or the contractions may not be permanent, but be followed by relaxation and the effusion of a large quantity of blood, which may either appear externally, or remain to become coagulated, and distend the uterus. For several hours after delivery, in some cases, this alternate relaxation and contraction goes on, to the great hazard of the patient, and if her condition be not clearly ascertained, and the proper remedies be employed, death may unexpectedly take place.

By far the most important remedies in these cases of uterine hemorrhage are constant and powerful pressure over the fundus uteri, the application of cold around the pelvis, and the free administration of wine, brandy, and other stimulants: ergot is indicated, but it most frequently produces no effect. The pressure and cold are always within our reach, however sudden the attack may be. The hypogastrium should be strongly compressed with the binder, and a pad of folded napkins placed under it, and in addition the hand should be firmly applied over the fundus uteri. I do not know who it was that first employed compression of the fundus uteri in cases of flooding after the birth of the child; but it has been often recommended, and there are few practitioners in this country who are not fully aware of the importance of the binder and pad, in exciting permanent and regular uterine contractions. Dr. M'Keevor states, that in 1815 it was recommended by Dr. Labatt in his lectures, and for a number of years before this Dr. Labatt was accustomed to recommend a thick firm pad, or compress, over the pubes, previous to the application of the ordinary binder, where, in former labours, uterine hemorrhage had taken place. Dr. M'Keevor states, that of 6665 women delivered during the years 1819 and 1820, only 25 were attacked with hemorrhage after the birth of the child. Of these, 15 occurred before the expulsion of the placenta, 10 afterwards, and in all the results was favourable. He saw only two fatal cases during the time he was in the Dublin Lying-in Hospital, and he attributes this small mortality to the entire process of parturition being understood; to the unassisted gradual efforts of the uterus; partly to the placenta having been kept cool and quiet, free from all sources of disturbance and irritation; but, above all, to the careful application of the binder immediately after delivery, by which means the expulsion of the placenta, and permanent contractions of the uterus, are most effectually secured, and whenever any tendency to hemorrhage did occur before the removal of the placenta, the first point invariably attended to was to tighten the binder, and in the event of this not succeeding, a thick firm compress, made by folding a couple of large coarse napkins into a square form, was placed over the region of the uterus, and the binder again adjusted. In the great majority of instances, these, with the admission of cool air, checked the discharge; if not sufficient, additional pressure was made with the hands.

At the same time that you efficiently compress the fundus uteri with the binder and pad, cold should be vigorously applied to excite the contractions of the uterus. The best mode of doing this is to plunge a large napkin in a pitcher of cold water, and dash it suddenly against the external parts, the nates and thighs; and this should be repeated till the uterus contracts, and the violence of the hemorrhage is controlled. I am satisfied that this is the most efficacious method of applying cold to excite uterine contractions; it is far less formidable than pouring water from a height over the naked abdomen, but it is not less efficacious, and it possesses these decided advantages over the other method, that while the application is made to the external parts, nates, and thighs, the pressure of the binder and pad is not withdrawn from the hypogastrium, the position of the patient is not changed from the side to the back, the bed is not inundated with water, and the application can be repeated as often, and continued as long, as the urgency of the symptoms may require. The abdomen may be exposed once, and cold water poured over it from a height, and the uterus made to contract, and the flow of blood be arrested for a time, but relaxation of the uterus may follow after a short interval, and the hemorrhage be renewed again with equal violence as at first; but we cannot with propriety expose the abdomen a second time, and empty over it from a height the contents of a great decanter or kettle. Besides, by adopting this practice, we sacrifice the whole of the effects derived from pressure on the fundus uteri. The application of a napkin soaked in vinegar and water to the parts is often sufficient, along with the binder, to restrain the hemorrhage where it is not very profuse.

I have very seldom introduced a plug of any kind into the vagina in these cases, but when there has been a draining of blood from the uterus, after the practice now described has been employed, a large soft sponge passed into the vagina, and pressed up against the os uteri, has appeared in some cases to promote the coagulation of the blood. The sponge, however, cannot be employed with safety after the expulsion of the child and placenta, unless the uterus be firmly compressed above the brim of the pelvis to prevent its becoming distended with blood. More frequently I have had recourse, with good effect, to the introduction of several pieces of smooth ice into the upper part of the vagina, and allowing them to remain there, in contact with the os uteri, and be dissolved; or pieces of ice have been inclosed in a bladder and laid over the pubes.

Other means besides those now described have been recommended in cases of flooding after the expulsion of the placenta. It has been proposed to inject cold water into the cavity of the uterus by means of the stomach-pump, and favourable reports have been given of the practice. The effect, I think, would be similar to directing forcibly a stream of cold water against a stump soon after amputation; the coagula in the cavity of the uterus and in the orifices of the vessels would be all washed away: nevertheless, it might perhaps be advantageous in some desperate cases. Port wine and water, as cold as possible, Dr. Collins says, injected into the rectum, has been of service. Some of the earlier writers on midwifery, and many in the present century, have strongly recommended the introduction of the hand within the uterus for the purpose of removing the coagula accumulated within the cavity, and to excite the uterus to contract. But it is not necessary to pass the hand into the uterus for the removal of coagula, because if the binder has been properly applied, and strong pressure made over the fundus uteri, clots cannot accumulate within the uterus, and if they have been permitted to collect in consequence of neglect, then expulsion will immediately follow the use of proper compression of the hypogastrium, without the introduction of the hand. Nor do I consider it necessary, to excite uterine contractions, that the hand should ever be introduced into the cavity of the uterus after the removal of the placenta. I am fully convinced, from repeated observation, that this practice, which is so common as to be almost universal in this country at the present time, is often not only ineffectual for the purpose, in the worst cases of flooding, but that it is often followed by the most pernicious effects; the coagula which nature has formed have been displaced by the hand, and the uterus has not been excited by the stimulus of it to secure a permanent contraction. In the greater number of fatal cases of uterine hemorrhage after the expulsion of the placenta, which have come under my observation, the hand had been introduced into the cavity, and the closed fist had been pressed for a longer or shorter time round and round against the lining membrane, to make the uterus contract. I do not recollect a single fatal case, where the unfortunate result could be fairly attributed to the want of the introduction of the hand into the cavity of the uterus, and the friction of the knuckles against the lining membrane. I have repeatedly passed the hand into the uterus to produce contraction, but it has refused to obey the stimulus of the hand; it has remained like a soft flaccid bag, more like a piece of intestine than uterus, and the blood has continued to pour down the arm, until the hand has been withdrawn, and more efficient remedies employed. Leroux was well aware that the stimulus of the hand would not in all cases excite the uterus to contract, for he observes, "where the os uteri is contracted, the means indicated by Levret are very efficacious, and remove the hemorrhage as if by a charm. But it is not so in complete inertia of the uterus; often it is widely dilated, and offers no resistance to the introduction of the hand. The introduction even of the whole hand excites little sensation, and the woman will promptly perish from hemorrhage if other means more active and certain are not employed to prevent it." The tampon or plug is the remedy Leroux recommends in cases of flooding after delivery, and he affirms that it will often succeed in stopping the flow of blood when all other means fail. Dr. Dewees observes, "that he has not found it necessary to introduce the hand for the purpose of stopping an hemorrhage after the expulsion of the placenta, during the last five-and-thirty years, as he regarded the practice as always frightful, and oftentimes unnecessary and pernicious. But it is difficult to subvert an established mode of practice, however unsound, and probably some of you, without much reflection, because you have heard this recommended, will pass up the hand into the cavity of the uterus after the expulsion of the placenta, on the very first occasion that you have an opportunity of doing so, remove all the coagula, and rub the inner surface with the fist till you are tired, without effect. I have seen cases repeatedly where this had been diligently performed by those who had neglected to apply the pad and binder, and all the other means now described. If you pass the hand at all within the parts, which I strongly suspect you will do, let me entreat you to carry it no farther than the os uteri, which you may, with much less risk and with greater effect, press and rub with the fingers and irritate than the inner surface of the body and fundus of the uterus.

Another reason has been assigned for passing the hand within the uterus in cases of flooding after the expulsion of the placenta, and which is the least satisfactory of all; it is, that the part of the uterus where the placenta was attached, from which the blood is flowing, may be compressed like a tourniquet between the hand in the uterus, and the other hand over the hypogastrium.

"My belief now is," says Dr. Gooch, "that when hemorrhage occurs after the removal of the placenta, the quickest way to stop it is to introduce the left hand closed within the uterus, apply the right hand open to the outside of the abdomen, and then between the two to compress the part where the placenta was attached, and from which chiefly the blood is flowing: when the hand is introduced merely as a stimulant, there is an interval of time between its arrival within the uterus and the secure contraction of this organ, during which much blood is often lost. By directing the hand to the very vessels from which it issues, and compressing them as I have described, this quantity is saved. If I may judge by my feeling, the blood stops, in a great degree, even before the uterus contracts; the hand acts first as a tourniquet, then as a stimulant. It is true we cannot tell with certainty where the placenta was attached, and consequently where the pressure should be applied; but as it is generally attached to or near the fundus, if the pressure be directed there it will generally be right. Besides, after the child is born, it is often several minutes before the placenta separates and descends: if, during this interval, we pass up the finger along the cord, and observes, at its enterance into the uterus, whether it turn towards the front, the back, the right or left side, or straight up to the fundus, we shall form a tolerably exact idea of the spot to which the placenta has been attached in this individual case." Without passing the whole hand into the uterus, it is impossible to know where the placenta adheres. Most frequently it is to the posterior part of the body and fundus; the hand, therefore, if introduced like a tourniquet, as here recommended, would compress the anterior wall, or that part of the uterus where there were no bleeding vessels.

Mauriceau recommends that women who are subject to flooding after delivery should be bled twice or thrice from the arm during pregnancy, and once, or oftener, after labour has commenced. There are cases of uterine hemorrhage after the delivery of the child and expulsion of the placenta unconnected altogether with plethora, or an excited state of the heart and arteries, and where bleeding and low diet do not prevent the accident. Rupturing the membranes at the very commencement of labour is by far the best remedy, the only thing indeed upon which any dependence can be placed.

I have had no experience of the effects of transfusion of blood in cases of uterine hemorrhage. Some have been published in support of the practice, but, as Dr. Merriman observes, they are far from conclusive. Few women, if any, have been saved by it. Dr. Blundell has given an account of six cases in which injection into the human veins was attempted. A woman had lost a large quantity of blood after the expulsion of the child. She had ceased to respire, when sixteen ounces of blood, procured by venesection, were thrown into the bleeding vein of the arm. No signs of resuscitation were observed. In a man who had lost a large quantity of blood by the bursting of an artery, it was not more successful. In a third case is was equally unsuccessful. No effect was produced by it in a woman dying from puerperal fever and loss of blood. In a cases of scirrhus of the pylorus it was employed, and the man died fifty-six hours after the operation. Dr. Ashwell has related a case of labour with placntal presentation, where transfusion was twice performed without success. Ten ounces of blood, which flowed copiously from a healthy young woman, were injected by Dr. Collins into the median vein of a patient dying from uterine hemorrhage, but it did not seem to have any more effect than causing the woman to mutter indistinctly; the circulation was not improved, and she expired a few minutes after the operation. Other cases have been recorded, with equally unsatisfactory results, which it is unnecessary to quote.

After attacks of uterine hemorrhage, the patient should not be raised from the horizontal position for several hours, and the strength should be supported by wine, beef-tea, and light nourishment. Brandy in gruel sometimes agrees when wine is rejected. A good large dose of the liquor opii sedativus often produces the most decided benefit after the hemorrhage has ceased; there are few cases before this in which opium does good, though it is constantly given in all the varieties of flooding, even when the great object is to excite uterine action. Where recovery is to take place after uterine hemorrhage, says Dr. M. Hall, the pallor of the countenance, the disposition to syncope, the coldness of the extremities, the feeble state of the pulse, and uninterrupted respiration, pass gradually away. Where the case is to terminate fatally, the symptoms gradually assume a more alarming aspect, the countenance becomes pale and sunk, the respiration stertorous, and the pulse cannot be felt at the wrist. There is great restlessness, and before death one or more fits of convulsion sometimes occur. Where recovery takes place, in some women it is astonishing how little permanent inconvenience is felt from the great loss of blood which they have sustained. In the course of ten days or a fortnight the effects have entirely disappeared; and this is the most common result. In some women, a violent determination of blood takes place to the brain, marked by heat, strong pulsations of the carotid and temporal arteries, intolerance of light, and all the symptoms of inflammation of the brain or its membranes. A strong febrile attack is also sometimes experienced without an increased determination of blood to any particular organ. These affections of the brain and nervous system are aggravated by depletion. The patient should be kept in a cool, dark room, and mild carthartics, anodynes, and antispasmodics, occasionally given. Where there is much headache and throbbing, a few leeches should be applied to the temples, and a cold lotion to the scalp.

ON RETENTION OF THE PLACENTA.

Atony, inertia, or want of uterine contraction, spasmodic or irregular contraction of the uterus, and morbid adhesion of the placenta to the uterus, are the three causes usually assigned for retention of the placenta beyond the usual period. Retained placenta from inactivity of the uterus occurs most frequently after protracted labours; the uterus remains so soft that it can be distinguished with difficulty from the other viscera in the hypogastrium. It does not form a hard defined body, as it does when thoroughly contracted. There are no pains, or only feeble pains, after the birth of the child, and there is no lengthening of the cord. In these cases the uterus should be firmly compressed, and the ergot of rye and stimulants given. At the end of an hour after the birth of the child, if the uterus does not contract and expel the placenta, pass up the hand and remove it. Where retention of the placenta arises from contraction of the cervix uteri, which is the condition termed hour-glass contraction, the fingers in a conical form should be introduced, the dilatation of the part effected, and the placenta removed. Sometimes it is possible to extract the placenta when only the fore and middle fingers can be introduced through the cervix, as in cases of placental presentation with rigidity of the os uteri. Occasionally, the cervix is so closely contracted that it is impossible to remove the placenta, and it remains in the cavity of the uterus till putrefaction takes place, and the patient is destroyed by the absorption of putrid animal matter. The best means of obviating the effects of these is to inject into the uterus and vagina plenty of tepid water, solutions of chloride of soda and lime, and decoction of oak bark. Where the placenta is retained by morbid adhesion, it should be removed as already described.

The best method of preventing accidents arising from retention of the placenta, as has already been repeatedly stated, is to apply the binder immediately after the birth of the child, to make pressure with the hand over the fundus uteri at short intervals, and slight traction upon the cord downward and backward in the direction of the hollow of the sacrum. By these means the upper part of the uterus usually goes on contracting till the placenta is detached and pressed down through the os uteri into the vagina. In all cases, whatever the cause of the retention may be, if the placenta at the end of an hour is not detached from the uterus and expelled, it should be withdrawn artificially. The difficulty of removing portions of placenta adhering with more than natural firmness to the uterus, or retained by contraction of the cervix, is only increased by delaying to interfere after an hour has elapsed from the delivery of the child. The seventh report in my Clinical Midwifery contains the histories of thirty-one cases of retained placenta. I am indebted to E. Johnson, Esq., for the following abstract of these cases.

Dr. J. Ramsbotham relates 11 fatal cases of retained placenta. Sixty-six cases of retention of the placenta requiring the introduction of the hand occurred to Dr. Collins in the Dublin Lying-in Hospital; 37 from want of proper uterine action: 19 from spasmodic or irregular action; and 10 where the placenta was adherent. In 24 of the 66 there was slight hemorrhage; 6 of the women died. Dr. Churchill states that in 259,250 cases of labour, retention of the placenta occurred 392 times, or about 1 in 661$\frac{1}{3}$. In 186 cases where the result to the mother is given, 36 died, or about 1 in 5.

A TABULAR VIEW

OF

THIRTY-FOUR CASES OF RETENTION OF THE PLACENTA.

	Date.	Symptoms and Treatment.	Result.
1	March 4, 1826	Labour at six and a half months; cord very soft, and torn away by midwife in attempting to extract the placenta; four hours after os uteri firmly contracted; much force employed to pass the hand; placenta left in uterus, and expelled next day without any unfavourable symptoms	Recovered.
2	Autumn, 1826	At Odessa. Placenta retained, and, in removal by the midwife, uterus completely inverted; great hemorrhage; uterus soon after replaced; convulsions	Died.
3	Jan. 4, 1828	Great hemorrhage before expulsion of placenta; hand could not be introduced, from firm contraction of cervix; funis broke off near placenta; placenta left within uterus; soon after placenta easily removed	Recovered.
4	Jan. 4, 1828	Placenta retained three hours; child born dead at seven and a half months; cervix uteri rigid and undilatable. The resistance gradually overcome by the tips of the thumb and two fingers introduced, and placenta, which was lying loose in the uterus, easily extracted	Recovered.
5	Sept. 22, 1828	Retained placenta four hours; the umbilical cord and portion of placenta extracted; vagina filled with coagula of blood; os uteri closely contracted. Placenta extracted with difficulty by two fingers	Recovered.
6	March 2, 1829	A portion of placenta left within the uterus; hemorrhage three days after, and pain in region of uterus; pulse and respiration quickened; skin of a dusky hue; pains in the joints; vomiting. — *Examination after death:* portion of placenta found adhering to fundus of uterus in a putrid condition; veins of the part distended with pus; ulceration of cartilages of knee	Died.
7	July 7, 1831	Morbid adhesion of placenta, and a part left behind which could not be removed; ninth day after delivery, giddiness and beatings of the temples; offensive dark-coloured vaginal discharge; os uteri open, and a portion of placenta felt, but could not be extracted. Injections with solution of chloride of soda; retained portion of placenta at last expelled	Recovered.

No.	Date.	Symptoms and Treatment.	Result.
8	Aug. 30, 1831	Portion of placenta left in uterus; three days after, fœtid dark-coloured discharge, vomiting, delirium, feeble pulse, and haggard countenance; orifice of uterus firmly contracted; only one finger could be introduced. Three doses of ergot of rye had been given, which only increased the sickness; died in two days, with all the symptoms of an animal poison having been introduced into the system. — *Examination after death:* large portion of placenta and membrane found in uterus in a black putrid state; coats of uterus healthy; no morbid adhesion of placenta	Died.
9	Oct. 20, 1832	Retention of placenta two hours after delivery; its extraction attempted, but the cord torn away; difficulty believed to depend on hour-glass contraction; a portion of placenta found in the vagina, and the uterus firmly contracted around it; two fingers insinuated through os uteri, and placenta easily extracted; dyspnœa came on, with pain in uterus. — *Examination after death:* right lung covered with lymph, and hepatized; effusion into pleura	Died.
10	June 18, 1834	Retained placenta from contraction of cervix; only a part could be removed; fœtid discharge from uterus; rapid feeble pulse, diarrhœa, rigors, sickness, cough, and difficulty of breathing; she became more and more feeble, and sank eighteen days after delivery. — *Examination after death:* pus in lungs; pleura inflamed; gangrene; placenta in a putrid state, hanging through os uteri, and filling upper part of vagina; no morbid adhesion of placenta to the uterus; pus in veins of the uterus; muscular coat soft	Died.
11	April 22, 1835	Retention of placenta from rapid contraction of cervix uteri after the expulsion of child; cord torn away near its insertion. Two fingers insinuated into the orifice of the uterus, the mass seized and extracted	Recovered.
12	July 26, 1835	Placenta left in uterus eleven hours; cord torn away; profuse hemorrhage. Frequent attempts had been made to extract placenta; oz. iij. of ergot had been given during the labour; hand afterwards passed into uterus in a conical form, and placenta extracted	Recovered.
13	Aug. 22, 1835	Hemorrhage, with retained placenta; cord has been torn away; very little time had passed since delivery. The whole hand was passed into uterus, and placenta easily extracted: flooding instantly ceased	Recovered.
14	Aug. 24, 1835	Placenta retained twenty-four hours; six months' fœtus; ergot of rye employed; uterus open; margin thin; point of finger readily touched a portion of hard placenta within cavity; the placenta, however, could not be seized, and it was left in uterus. Purgative draught given, and during its action the placenta was expelled	Recovered.
15	Oct. 23, 1835	Retention of placenta, with alarming hemorrhage soon after the expulsion of the child. Several unsuccessful attempts were made to extract it; a serious affection of the brain took place. — *Examination after death:* lymph in superior longitudinal sinus of brain, and all the veins emptying themselves into it filled with lymph, the result of inflammation; no trace of inflammation about the uterus; portion of putrid placenta adhered to the fundus; morbid adhesion of placenta to uterus	Died.

16	Aug. 13, 1836	Placenta retained thirty-four hours; child dead. Ergot of rye had been given, and repeated unsuccessful efforts to extract placenta: os uteri closed; discharge very fœtid; the orifice of uterus at last yielded, and allowed the introduction of three fingers; with them the placenta was extracted	Recovered.
17	Dec. 25, 1836	Placenta retained, with hemorrhage; cord torn from placenta directly child was born, it having been twisted three times round child; severe hemorrhage followed. Attempts had been made to extract the placenta: the vagina was filled with clots an hour after delivery; placenta at last extracted; hemorrhage continued; exhaustion	Died three hours after delivery.
18	Dec. 12, 1827	Placenta retained five hours, with severe uterine hemorrhage; an hour elapsed before she was seen, when she was greatly exhausted from the discharge of blood. Placenta easily extracted, which was grasped by cervix uteri; hemorrhage restrained by vinegar and water	Recovered.
19	Aug. 14, 1838	Placenta retained from unusual contraction soon after expulsion of the child; umbilical cord lacerated. Some attempts were made to extract the placenta, but the hand could not be introduced within the orifice; fœtid discharge came on in a day or two; peritonitis.—*Examination after death*: portion of placenta firmly adhered to upper part of uterus; placenta and uterus so firmly united that they appeared one substance; peritonitis	Died.
20	Sept. 28, 1838	Placenta retained two days; repeated attempts had been made to extract it; dark-coloured discharge from the vagina; pulse rapid; nausea; headache. A portion of placenta felt protruding through os uteri, which was easily drawn down into vagina	Recovered.
21	June 28, 1828	Placenta retained eighteen hours; cord had been torn away in the attempt to remove the placenta; no hemorrhage; cervix uteri was found to be very contracted. By cautiously pressing the finger against the os uteri for an hour, the placenta was felt, and in a short time removed	Recovered.
22	Oct. 10, 1838	Retention of the placenta in the vagina for three hours, on account of a broad smooth septum passing from anterior to posterior wall of vagina; one half of the placenta was on the left side of the septum, the other half, with cordaces, on the right side; both violently pressed down. Placenta was divided with a pair of scissors, and immediately came away	Recovered.
23	Dec. 23, 1838	Placenta retained three hours; child born dead. Three or four efforts had been made to introduce the hand into the uterus, but the cervix was firmly contracted; complete hour-glass contraction. The fingers slowly were insinuated into the uterus, and the placenta extracted	Recovered.
24	May 4, 1839	Placenta retained twenty-four hours; cord broken from the slightest touch; child dead; no hemorrhage, but great disposition to syncope; neck of uterus contracted. One finger was passed after another until the whole hand entered the uterus: the placenta was extracted with difficulty; phlebitis. — *Examination after death*: femoral and pelvic veins all plugged up with lymph; uterus flabby, and twice the natural size	Died
	Jan. 29, 1840	Hemorrhage after expulsion of child; binder applied; stimulants given; flooding continued for a quarter of an hour. The hand was then introduced into the uterus, and the placenta felt adhering; the fingers were spread out towards the margin of the placenta, which was pressed off from the uterus; hemorrhage arrested	Recovered.

No.	Date.	Symptoms and Treatment.	Result.
26	April 28, 1840	Placenta retained five hours from contraction of the neck of the uterus. The whole hand was introduced into the vagina, and the fingers gradually insinuated into the uterus: placenta extracted	Recovered.
27	Nov. 30, 1840	Placenta retained five hours; violent contraction of cervix uteri. A good deal of force was required to introduce the finger into os uteri; placenta firmly adhered to uterus; with great care the whole placenta was extracted in fragments	Recovered.
28	Dec. 5, 1840	Retention of the whole placenta three hours; cervix so contracted that it was impossible to introduce the whole hand. Introduced the whole hand into vagina, and inserted two fingers into the uterus, and thus detached the placenta, and pressed it down into the vagina	Recovered.
29	Jan. 23, 1841	Retained placenta three hours: child born with cord twisted three times round the neck; cord was broken close to the placenta; cervix had contracted firmly after the expulsion of the child. The whole hand was insinuated into the uterus, and the placenta, which was adhering, was removed with ease	Recovered.
30	Oct. 20, 1841	Retained placenta eight hours; funis broken off close to placenta soon after delivery, and slight hemorrhage took place. The hand was introduced into the vagina, and, with two fingers introduced within the uterus, the placenta was extracted	Recovered.
31	Jan. 14, 1842	Profuse hemorrhage soon after the birth of the child. The hand was immediately passed into the uterus to extract placenta, but a portion adhered so firmly, that it could not be removed by the surgeon: hemorrhage continued. — After death, a portion of placenta was found adhering	Died.
32	Feb. 14, 1842	Hemorrhage and retained placenta after the expulsion of a dead fœtus of four and a half months. Mr. Owen made several attempts to extract the placenta, but they were unsuccessful, from the contracted state of the os uteri. My efforts also failed; and the placenta was expelled seven days after in a putrid state	Recovered.
33	Dec. 12, 1842	Thirteen days after labour, sickness; loaded tongue; rigors; rapid pulse; fœtid discharge and coagula expelled from the vagina. No suspicion that any part of the placenta was retained. Found a portion, half the size of the fist, in the neck of the uterus, which was readily extracted	Recovered.
34	Oct. 1843	The placenta of a premature child retained five days; great hemorrhage and fœtid discharge. The hand being passed into the vagina, the placenta was extracted, in pieces, with two fingers. Hemorrhage ceased, but death took place, apparently from loss of blood	Died.

LECTURE XXXVI.

ON LABOURS COMPLICATED WITH CONVULSIONS.

There is a striking resemblance between the symptoms observed in a case of common epilepsy and in one of puerperal convulsions, or eclampsia, as it is called by nosologists. In both these diseases insensibility takes place during the fits, and all the voluntary muscles of the face, trunk, and extremities become convulsed. When a fit of puerperal convulsions comes on, the woman becomes perfectly unconscious of every thing around her, and the muscles of the eyes and face are usually first affected. Irregular spasmodic twitchings are observed about the mouth and eyelids, which produce great distortion of the countenance : the eyes are often turned upward and inward to the root of the nose, and roll rapidly about in different directions. The lower jaw is either firmly clenched against the upper, or it is drawn to one side ; and the tongue, being protruded between the teeth, is often severely lacerated. Every muscle of the body soon becomes convulsed ; the spasm is violent and universal ; the respiration, which is at first hurried, afterwards becomes slow and stertorous, as the convulsions subside ; and a quantity of frothy saliva, tinged with blood, is blown from the mouth with a peculiar noise, as in an ordinary epileptic fit. Sometimes the muscles on one side of the face and body only are at first affected ; and after the spasm has ceased in them, those on the opposite side become convulsed. The pupils of the eyes are usually dilated and insensible during a fit of puerperal convulsions ; but in some women, both between and during the paroxysms, they are closely contracted. The pulse varies extremely, being either very hurried, or slower than natural. After the convulsion has endured for a longer or a shorter period, as in cases of epilepsy, it gradually ceases ; and the patient, apparently greatly exhausted, is left in a state of deep stupor, with stertorous breathing. The consciousness generally does not return before another fit takes place, and this happens, in a greater number of instances, in a short period, when the same phenomena are observed. A great number of violent fits are often experienced by some women during many hours, at longer or shorter intervals, without any return of sensibility. The attacks may terminate in a state resembling apoplexy, as epilepsy sometimes does, which may soon prove fatal ; or the fits may subside, and the recollection be gradually restored. If there have been no labour pains before the fits have come on, the os uteri most frequently begins to dilate ; but the uterine contractions are usually feeble and irregular, and they seem to pass into convulsions, or to alternate with the fits. Sometimes the child is expelled by the pains ; but more frequently they are inefficient, and the delivery cannot be completed without artificial assistance.

In some women the fits are preceded by certain symptoms indicating a plethoric state of the vessels of the brain, and great nervous irritability. There is usually headache, more or less intense; throbbing of the temporal arteries; sense of weight and constriction across the forehead; giddiness; drowsiness; the sight and hearing disturbed; flushing and tumefaction of the countenance; slight delirium, or confusion of thought, or loss of memory; and other signs of cerebral disturbance. Pain in the epigastric region, and increased sensibility of the uterus, sometimes precede the fits; but there are cases of violent puerperal convulsions where no precursory or premonitory symptoms of any kind are perceived; there is nothing like the aura epileptica observed before attacks of puerperal convulsions. They may occur in the latter months of pregnancy, before the uterus has begun to contract, during the different stages of labour, and several days or weeks after delivery. I have never met with a case of true puerperal convulsions before the sixth month of pregnancy; the spasmodic affections which have occurred at an earlier period having been connected with hysteria, and unaccompanied with loss of consciousness.

It has been observed by all practitioners, that, in a very great proportion of cases, it is in the first pregnancy or labour that puerperal convulsions occur. "Women are far more liable," says Dr. Denman, to convulsions in first than in subsequent labours; and then, it is said, more frequently when the child is dead than when it is living. But when women have convulsions the death of the child ought generally to be esteemed rather an effect than a cause, as they have often been delivered of living children when they were in convulsions, or of dead, and even putrid children, without any tendency to convulsions. Some women have also had convulsions in several successive labours: but having had them in one, they generally, by the precautions taken, or some natural change, escape them in future. Lastly, I was for many years persuaded that convulsions only happened when the head presented; but experience has proved that they sometimes occur in preternatural presentations of the child." Of 19 cases recorded by Dr. Joseph Clarke, 16 were first children. Of 48 related by Dr. Merriman, there were 36 instances in which it was the patient's first labour. Of 30 cases which occurred to Dr. Collins, 29 were in women with their first children; and the other single case was a second pregnancy, but in a woman who had suffered a similar attack with her first pregnancy. 14 of the 32 children (two of the women having had twins) were born alive. In 18 of the 30 the convulsions subsided after delivery; in 10 the fits occurred both before and after; and in 2 the attack did not come on till after delivery. In 15 of the 30 the patients were delivered by the natural efforts; in 6 delivery was effected by the forceps; in 8 by the perforator and crotchet; and in 1 the feet presented. Two of the children were born putrid. Five of the women died. In 6 of the 48 cases related by Dr. Merriman the convulsions did not occur till after delivery. Five of these patients recovered; the other, after the epileptic attack, became maniacal, but appeared to be gradually recovering when, at the end of three weeks from the first seizure, she was attacked with another fit, and died. All the children were alive. In three cases the women were pregnant of twins. In two of these cases the attack of convulsions occurred in the interval between the births of the two children. All the women were delivered without artificial assistance; two of them recovered; and three of the children were born alive. In eleven cases the delivery was effected by the forceps. All these women recovered, and three of the children were born alive. In nine cases the perforator was employed. Seven of the women recovered. In four cases the operation of turning was resorted to; two of the women recovered; all the children were dead born. In one case the woman died undelivered. In 14 cases the children were born without extraordinary assistance. 10 of these women recovered, and 5 of the children were born alive. Thus 37 women recovered, and 11 died. 17 children were born alive (including the 6 born before the mothers were attacked with convulsions); 34 were born dead. Dr. Ramsbotham has related the histories of 26 cases; of which, 10 proved fatal. 13 occurred before delivery, 10 during labour, and 4 after. Dr. Ingleby relates 35 cases; of which, 11 were fatal. Mauriceau 42; 7 during pregnancy, 3 of which were fatal; 19 during labour, 11 of which ended fatally; and 16 after delivery, of which 5 were fatal.

Puerperal convulsions occur in all countries, and in all the different ranks of life. Those women are most predisposed to the disease who have had hysteria or epilepsy in early life, who have suffered from injuries of the head, or who have had violent attacks of fever with severe affections of the brain. Depressing passions of the mind appear to produce a predisposition to the disease. Unmarried women, who are excluded from society, and often addicted to the improper use of stimulants, are peculiarly liable to puerperal convulsions and mania. Terror, and other violent mental impressions, and sometimes the pains of labour, alone, are sufficient to excite convulsions. The disease occurs not only in strong plethoric young women with their first children — in such as are of a coarse make, with short thick necks — but in weak, irritable nervous females. There are some cases where irregularities of diet, especially the use of very indigestible food and stimulants, appear, without any other cause that can be discovered, to give rise to the disease. There are many cases in which the peculiar condition of the nervous system of the uterus appears to be the sole cause, and in all cases it is the principal predisposing cause, for the fits of convulsions occur in most women in the first pregnancy and labour, and at no other time but during pregnancy and labour; and they often suddenly cease when the labour is completed, after every remedy has been employed without avail, except artificial delivery. The condition of the brain on which the loss of consciousness and convulsions depends, is obviously produced by sympathy with the nervous system of the uterus; and the fits return, and increase in violence, till the uterus is emptied of its contents, as it is on them the irritation of the nerves of the uterus alone depends.

In some cases there has been observed an unusual degree of redness and softening of the cerebral substance in those who have died from puerperal convulsions; great congestion of the sinuses and smaller veins and arteries of the brain; effusion of blood or serum into the ventricles, and lymph covering the surface of the hemispheres. In others there has been no morbid appearance whatever found in the brain, to account for the symptoms. At Edinburgh, in 1816, I examined, with Dr. J. Thomson and Dr. Gordon, the brain of a young woman who had died of puerperal convulsions; but except a little turgescence of the bloodvessels, and not more than is seen in many who have died of disease altogether unconnected with the brain, there was nothing to account for the symptoms. In other cases, however, organic disease of the brain has been discovered after death, as you will see by looking at the following table.

Dr. Ramsbotham made a post-mortem examination of the brain in four of the fatal cases which he observed. The first case was referrible to injury of the head. There were both convulsions and paralysis, and the woman died undelivered. "Blood was found extravasated between the dura and pia mater, and upon the orbital processes under the right lobe." In the second fatal case he states that there was no positive derangement detected in the brain, except turgescence of the vessels of the pia mater. The head of another patient was examined by an experienced anatomist, who reported that after a very minute examination of every portion of the brain no positive derangement could be detected, and that the only appearance in any way different from that usually met with was in the vessels of the pia mater, which were thought to be somewhat more loaded with blood than in the general cases of cerebral inspection. In Case 4, after a most careful examination of the head, no positive breach of the vessels could be detected. The bloodvessels of the pia mater were beautifully injected with blood, and a section of the substance of the brain showed more bloody points than usual. There was also a quantity of turgid serum in the ventricles. The vessels of the cerebellum were likewise anormally distended with blood. From the dissections, and other circumstances, Dr. R. concludes that "the whole train of symptoms evinces considerable derangement in the functions of the brain and nervous system; yet after death, correspondent marks of organic mischief within the head are seldom met with (vol. ii., p. 248). The different anatomical inquiries at which I have been present have not disclosed such regular appearances as to sanction the uniform deduction that the brain was the principal seat of the disease. I suspect than in many instances that important organ is no otherwise implicated than through the medium of sympathetic irritation." Of the appearances after death," observes Dr. Merriman, "in those who have died of puerperal epilepsy, contrary statements have been given. Dr. Denman says, that in the examination of many women who have died from convulsions, he has never seen an instance of effusion of blood in the brain, though the vessels were extremely turgid; but has always remarked, that the heart was unusually flaccid; without a single drop in the auricles or ventricles: but he adds, that Mr. Hewson had informed him of a case of convulsions where an effusion of blood in a small quantity had been found on the surface of the brain; and in his fifth edition he mentions a case by Dr. Hooper, where a coagulum of blood, weighing nearly four ounces, was found between the dura and pia mater. In one instance I have distinctly seen an effusion of blood in the posterior part of the cranium; but the quantity was not large, and Dr. Ley has lately met with a similar case." M. Cruveilhier examined a case in which not the slightest trace of congestion of the vessels of the brain could be detected. M. Bontilleux relates another, in which he could detect no manifest alteration within the skull. Dr. Collins says, "I conceive we are quite ignorant as yet of what the cause may be: nor could I ever find on dissection any appearance to enable me to even hazard an opinion on the subject."

TREATMENT OF PUERPERAL CONVULSIONS.

The best systematic writers on midwifery during the last two centuries have recommended copious bloodletting in puerperal convulsions, and artificial delivery where depletion failed to remove the fits. They have all considered the brain to be the seat of the disease.

Mauriceau thought prompt delivery to be the best remedy, and where the orifice of the uterus did not admit of this, he advised blood to be drawn from the arm and foot, and stimulating enemata to be employed, to diminish the quantity of blood in the brain. He states that he had seen emetics administered without success, or with injurious effects. Where consciousness did not return between the fits, but the woman remained insensible, foaming at the mouth, with stertorous breathing, then both the mother and child he believed would die, if they were not promptly relieved by delivery. I have saved, he says, the lives of many women in this way, but others have not failed to die after having been delivered in due time, and in the proper manner—"bien et duement accouchées."

He admits that some cases will prove fatal whatever is done. If the child is alive he recommends the operation of turning; if dead, craniotomy.

There are some women, he says, who are always attacked with convulsions either before or after delivery. To prevent such an accident he recommends bleeding from the arm twice or three times during pregnancy, and once after labour has commenced.

Puzos has also given an account of puerperal convulsions, and has recommended prompt and copious bloodletting, to relieve the brain from the excessive quantity of blood by which it is oppressed. After the bleeding, lavements, he says, must be employed, and it should be ascertained by an examination whether the uterus is dilating, and, if the bleedings and other remedies do not calm the convulsions, then delivery is the best thing that can be done, which removes the pressure from the great bloodvessels of the abdomen, and allows it to circulate freely. The relief from delivery, he says, is not instantaneous, for the convulsions will often continue for a time, but at longer intervals, and patients sometimes remain for two days in a state of lethargy, and afterwards recover. But when the convulsions continue in spite of bloodlettings,and delivery, and the coma, and stertorous breathing, and foaming at the mouth, then the disorder will terminate fatally; but we have the consolation to know that we merit no reproach, having employed all the means we possess to overcome so grievous an accident. It is to be presumed, because we have not succeeded, that lesions (crevases) have been made in the brain by the violence of the convulsions, and that delivery could not remedy these. Thus, he adds, in the acute convulsions which precede or accompany labour, we cannot be too prompt and vigorous in the application of the proper resources; and as these means are sometimes insufficient when the disease is once established, the accoucheur should be attentive to the first symptoms which announce convulsions; for it sometimes happens, that in a labour accompanied with the most favourable symptoms, a woman all at once complains of dazzling of the eyes, of weight in the forehead or posterior part of the head, and of sudden loss of vision; symptoms which all announce that an attack of convulsion is at hand. I have seen women suddenly seized with frightful convulsions, he says, during labour, because attention had not been paid them when they complained of pain of the head. We perceive, then, that it is much more easy to prevent the evil, than to destroy it when it is once established; since the most powerful remedies do not prevent the death of the mother and the child, which these convulsions put in the greatest danger. Therefore I bleed copiously, and that on the first appearance of the symptoms which threaten convulsions; and I have often by this means relieved very speedily the headache, restored the vision, and completed the delivery happily in a short time.

Copious bloodletting in puerperal convulsions is the first remedy now employed by all practitioners in this country; but the extent to which depletion is to be carried must be regulated by the constitution of the patient, the violence of the symptoms, and the effects produced by the loss of blood. Profuse bloodletting will not invariably control the disease, as some have asserted: nay, I am persuaded that the sudden abstraction of fifty or more ounces of blood from the arm of some individuals, instead of arresting the disease, would destroy life. So feeble is the circulation of blood in some women, that it is impossible to remove this quantity from the arm. In young, robust, plethoric women, the best plan certainly is to take away as soon as possible after the attack twenty or twenty-five ounces of blood from the arm, to cut off the hair or shave the scalp, and apply over the head cold lotion or ice in a bladder; to put ten grains or a scruple of calomel upon the tongue, or two drops or croton oil, if the bowels require immediate relief; to throw up into the rectum a stimulating enema, and to apply warmth, mustard poultices, and rubefacients, to the inside of the legs and thighs; at the same time to adopt every precaution to prevent the patient from being bruised or injured by the violence of the convulsive movements into which the body is thrown. If the fits continue after these remedies have been employed, with undiminished violence, and if the pulse is full and strong, and signs of congestion of the brain are still present, you may open another vein in the arm, and remove fifteen or twenty ounces more. A third bleeding to this extent is undoubtedly necessary and proper in some cases, but I prefer greatly, after thirty or thirty-five ounces of blood have been drawn from the arm, to trust to local bleeding, and especially to the application of cupping-glasses to the temples and nape of the neck. When the constitution has been previously exhausted by some chronic disease, or hemorrhage; or without these, if it is peculiarly delicate, nervous, and irritable, and has been weakened by grief, and other depressing passions, and the pulse is very rapid and feeble, it is better to trust entirely to the local abstraction of blood, and to the remedies now described, and to abstain altogether from general bleeding. If you look at the following table, you will see that some women died who were bled profusely, and that others recovered where a small quantity was drawn from the arm, or where it was entirely drawn by cupping from the temples and nape of the neck. These observations are made with a view of preventing you from having recourse to extensive depletion in all cases of puerperal convulsions, without carefully considering the condition and previous history of the patient. Profuse and indiscriminate bloodletting cannot be practised with impunity in this disease.

This is the treatment which ought to be employed in cases of puerperal convulsions before labour comes on, and also after labour has commenced, and if the fits do not diminish in frequency and violence, and the parts are in a condition to admit of artificial delivery, it is very important that it should not be long delayed. In one case which occurred in the latter months these means were vigorously employed without effect, and when the patient appeared sinking, the operation of turning was performed, though the os uteri had not begun to dilate, and the fits ceased immediately after the delivery had been effected, and recovery took place. Should the head of the child not have descended sufficiently low for the forceps to be applied when delivery becomes absolutely necessary, recourse should be had to the perforator. Even when the os uteri is fully dilated, and the head of the child has passed so far into the pelvis that an ear can be felt, it is difficult to apply the forceps and extract the head without danger to the mother, and where the insensibility is complete, and the intervals between the fits short, and the patient cannot be retained in the proper position, the employment of the forceps is always attended with considerable hazard to the perineum and soft parts.

Opium has been almost universally condemned in puerperal convulsions, and I consider it always improper before bloodletting has been employed to a sufficient extent, and delivery has been completed either spontaneously or artificially. In some of the most severe cases which I have seen, after copious venesection and delivery, large doses of the liquor opii sedativus have appeared to produce very powerful effects in arresting the fits; in others no benefit whatever resulted from the employment of sedatives of any kind. The application of leeches to the region of the uterus appeared, in a recent case of mania complicated with puerperal convulsions, to be attended with the most striking benefit after all other means had been tried without effect. Sedatives have been recommended to be applied to the cervix uteri, or thrown up into the rectum during labour and after delivery, in cases of puerperal convulsion, but I have had no experience of their efficacy.

A TABULAR VIEW OF FIFTY-FOUR CASES OF PUERPERAL CONVULSIONS.

No.	Date.	Causes, Symptoms, Treatment, and Morbid Appearances.	Result.
1	Edinburgh, —— 1816	——, æt. 21, first pregnancy, ninth month; unmarried; numerous violent fits of convulsion at short intervals during twelve hours, without a return of consciousness: orifice of uterus soft and dilatable, but no sign of labour; pulse rapid and feeble; the fits continuing with coma; the child was easily turned and delivered; death in six hours. V.S. ad oz. l.; head shaved; cold lotions; calomel; enemata; artificial delivery.	Died; vessels of brain distended.
2	July 12, 1823	——, æt. 26, first pregnancy, ninth month; fifty hours in labour; head of child low in the pelvis; vagina and perineum rigid; pulse full and strong; face flushed; occasional incoherence, and slight convulsive tremors of the face and extremities. Venesection to oz. xviij. followed by two severe fits of convulsion and insensibility; unsuccessful attempts to deliver with the long forceps; craniotomy; no fit after delivery; consciousness soon returned; uterine inflammation followed	Recovered.
3	—— 1825	——, first pregnancy, ninth month; numerous violent fits of convulsion; comatose during the short intervals; pupils widely dilated. No treatment allowed to be employed, and she died soon after, undelivered. (At Biala Cerkew Ukraine.)	Died.
4	Jan. 22, 1827	——, æt. 26, first pregnancy, seventh month; eight weeks before delivery suddenly seized with coma, from which she recovered after copious bleeding, &c.; headache, giddiness, and partial loss of speech, but consciousness and memory have remained; slight hemiplegia of the right side; pulse 90; went to the full period; labour natural; in a few hours convulsions, coma, dilated pupil, retention of urine. Died on the 29th. Copious venesection and cupping; head shaved; cold lotions and blisters; cathartics. — *Examination after death:* a thick layer of lymph on the surfaces of both hemispheres of brain, softening below; veins filled with firm coagula, and ventricles with serum	Died.
5	—— 1827	——, æt. 20, unmarried, first pregnancy, seven months and a half; had epilepsy in early life; headache, drowsiness, loss of memory; paralysis of right inferior extremity after a slight fit of convulsion and coma; labour natural; child alive; no fit after delivery. Venesection, cupping, head shaved, cathartics, low diet	Recovered.
6	Jan. 27, 1828	——, æt. 25, eighth month of second or third pregnancy; headache and general indisposition after violent excitement; soon seized with convulsions, which continued, with short intervals, nine hours; complete insensibility; pulse slow, full, and strong; os uteri dilated; head of child low in the pelvis; expelled during the fits. Venesection ad oz. x. and oz. xxiv.; head shaved; and cupping to oz. xij.	Recovered.
7	May 2, 1828	First pregnancy, unmarried, ninth month; severe fits in the first stage of labour; os uteri rigid, and imperfectly dilated. Venesection ad oz. xxiv., repeated to oz. xij. Fits continued; os uteri partially dilated. Perforation. Fits immediately ceased	Recovered; soon after attacked with mania.

No.	Date.	Causes, Symptoms, Treatment, and Morbid Appearances.	Result.
8	May 20, 1828	Delivered at 3 A.M.; convulsions came on soon after. Venesection ad oz. xxv. At 1 P.M. the fits ceased and consciousness returned; weariness, headache, and oppression continued.	Recovered.
	June 21, 1828	——, æt. 24, third or fourth pregnancy, 7½ months; epileptic in early life; after suffering for several days from an uneasy sensation of weight in the head and giddiness, was suddenly attacked with convulsions and insensibility; os uteri dilated; no symptoms of labour; no fit; stupor continues; pulse 80; copious alvine evacuations; went to the full period, and was safely delivered of a living child. Venesection ad oz. xx; head shaved, cold lotions, enemata, cathartics; venesection ad oz. xij.	Recovered.
10	Sept. 16, 1828	——, æt. 24, first pregnancy, ninth month; constipation and headache for several days; several fits of convulsion; insensible in the intervals; pupils dilated; pulse 80, full and strong; face flushed; os uteri slightly dilated; feeble irregular uterine contractions. After venesection and free evacuation of the bowels, fits ceased; delivered next day, without assistance, of a living child. Venesection ad oz. xxxv.; leeches, head shaved, calomel, enemata.	Recovered.
11	Oct. 6, 1828	——, æt. 33, second pregnancy, first stage of labour; had convulsions during her former labour; headache, giddiness, and drowsiness, during the latter months; venesection recommended, but not employed; several severe fits, at short intervals, during first stage of labour; muscles of left side most affected; face flushed; pupils dilated; pulse rapid, feeble, and irregular; os uteri widely dilated; head of child pressing through brim of pelvis. Venesection ad oz. xx., and cupping from temple to oz. xij. Child born alive next morning; fits soon ceased, but she died three months after in a fit of convulsion, after taking an emetic without advice	Died: softening of the brain, with effusion of serum into the ventricles; tubercles in the lungs.
12	Jan. 24, 1829	——, æt. 18, first pregnancy, ninth month; delivered at 11 A.M., labour natural. The expulsion of the placenta was soon followed by a strong fit of convulsion; venesection was immediately employed. At 4 P.M. frequent severe fits without any intervals of consciousness; venesection repeated. At 8 P.M. fits and stupor continued, when forty drops of laudanum were given without my consent. Jan. 25th: fits continued. Twenty drops of laudanum; sinapism to the legs. 26th: severe fits during the night; has taken sixty drops of laudanum at three doses, which appeared to calm the violent agitation after the paroxysms. 27th, 10 A.M.: severe and frequent fits during the night; breathing stertorous; pulse rapid and feeble. Venesection ad oz. xxxv., repeated to oz. xvj.; head shaved, enemata, calomel, ol. ricini, &c. Died on the 28th	Died; turgescence of the bloodvessels of the pia mater; no other morbid appearance.
13	Mar. 23, 1829	——, middle age, first pregnancy, and near full period. Convulsions during the first stage; headache complained of for some weeks previously; os uteri fully dilated, and half of the head in the cavity of the pelvis; pains ceased after the convulsions began, until the next morning, when they returned, and a dead child was expelled. The day after, the fits returned; and on the 27th she was attacked with uterine inflammation, and died in three days. Leeches, venesection, and cupping, were employed, together with calomel, blisters, &c.	Died; no post-mortem examination allowed.

14	April 15, 1829	—— æt. 30, ninth month. Headache, vertigo and depression of spirits, during the seventh and eighth months; convulsions, and hemiplegia of left side, took place seventeen days before labour. She was bled to oz. xvj., and cupped ad oz. xvj., and afterwards venesection ad oz. xij.; head shaved; blisters and cathartics. The labour was completed, without assistance, but she died three days after, comatose. — *Post-mortem examination:* serum in the ventricles; a small scrofulous tumour adhered to the basilar artery; a portion of right lobe of cerebrum was soft, and of a yellow colour	Died.
15	Dec. 1829	Convulsions and insensibility during labour; pulse rapid and feeble. Delivery was completed by craniotomy; she was not bled; died comatose three days after delivery. — *Post-mortem examination:* a table-spoonful of serum was found at the base of the brain; great vascularity around the tuber annulare	Died.
16	—— 1829	——, æt. 30, ninth month of fourth or fifth pregnancy; violent convulsions at intervals during twenty-four hours, without sign of labour; convulsions continued in spite of copious venesection, calomel, &c. Turning was performed with difficulty before the os uteri had begun to dilate, and extraction completed with great difficulty, from the uterus contracting around the neck of the child; convulsions immediately ceased after delivery	Recovered.
17	—— 1829	——, æt. 20, hysterical, eighth month of first pregnancy; headache and giddiness for several days; twenty to thirty severe fits of convulsions during fourteen hours; insensible at intervals; labour came on twenty-four hours after the first fit, and child expelled; no fit after delivery; consciousness did not return for several days; uterine and crural phlebitis followed. Calomel, venesection, and enemata employed, and ice to scalp in a bladder	Recovered.
18	Sept. 29, 1829	Ninth month of first pregnancy; violent convulsions during labour; oz. iv. of blood had been drawn by her medical attendant; os uteri slightly open; no pain; fits continued five hours, when a dead child was expelled; no fits after delivery, but she continued comatose until she died	Died.
19	—— 1829	——, æt. 28; seized with convulsions eight days after a natural labour; ten severe fits in two hours; in the intervals she was completely insensible, with stertorous breathing; dilated pupils; the pulse 110, feeble; the fits went off in a few hours, but she remained several days in a drowsy confused state: the attack followed the use of very indigestible food: has since been twice confined, and had no convulsions. Cupping oz. xij.; calomel, cathartics, enema, head shaved, blistering	Recovered.
20	April 8, 1830	——, æt. 25, first pregnancy, ninth month; hysteria at the age of 15; at the end of ninth month frequent fits of convulsion in the course of twelve hours; consciousness returned after venesection; severe headache, and occasional spasms of the face and extremities; labour natural. Venesection, oz. xxx.; calomel gr. x.; enemata; cathartics; cold to the shaved head	Recovered.
21	Jan. 1, 1831	——, æt. 20, first pregnancy, ninth month; incoherence, followed by convulsions, towards the end of the first stage of a protracted labour; labour pains strong and regular, and the greater part of the head in the cavity of the pelvis; the fits were relieved, and she was delivered in a few hours of a dead child without help. Venesection, oz. xviij.; venesection, oz. x.	Recovered.

No.	Date.	Causes, Symptoms, Treatment, and Morbid Appearances.	Result.
22	Autumn, 1831	——, æt. 30, first pregnancy; incoherence, stupor, and convulsions, at the end of the first stage of labour; symptoms relieved by venesection, oz. xxxvj.; labour pains continued, and a living child was expelled without artificial assistance	Recovered.
23	Dec. 1831	Severe fits of convulsion soon after the commencement of labour; no relief from copious venesection; os uteri partially dilated; head above brim of pelvis; pains ceased. Perforation. One slight fit after delivery; consciousness gradually returned	Recovered.
24	May 9, 1832	——, æt. 30, had epilepsy when a child. Labour began at 8 A.M., 7th May: membranes ruptured in the night; os uteri dilated to the size of a crown on the morning of the 8th; pains feeble; complained of headache; pulse full and slow. Venesection; enema. Labour continued till the morning of the 9th, when severe convulsive fits supervened; venesection repeated; fits and unconsciousness continued for several hours, and the pains went entirely off. The head being still high up in the pelvis, and the os uteri rigid and undilated, craniotomy was performed: no fit after delivery. Venesection, oz. xvj.; enema; cathartics; venesection, oz. xxv.; head shaved; cold lotions, &c.	Recovered.
25	Dec. 1832	Convulsion in the seventh month of first pregnancy, after drinking brandy. Venesection ad oz. xxxij. and twelve leeches. Fourteen days after delivered of a dead child without artificial assistance	Recovered.
26	July 5, 1833	——, first pregnancy; delirium and slight convulsions came on suddenly, after the labour had lasted upwards of twenty-four hours; vagina rigid, hot, and tender; os uteri not fully dilated. Copious venesection produced no relief: the head being beyond the reach of the forceps, craniotomy was performed; the fits immediately ceased; consciousness was not perfectly restored for several days	Recovered.
27	Oct. 1833	——, middle age; convulsions during first labour, without any precursory symptoms. Venesection, oz. xxx. A feeble child was born alive by the natural pains; convulsions ceased immediately after delivery	Recovered.
28	Feb. 25, 1833	——, æt. 25, first pregnancy, ninth month. After eating roasted pork for dinner and supper, was seized with vomiting, convulsions, and insensibility, at 3 A.M. After venesection and an enema, the fits became slighter, the pulse extremely rapid and feeble; the fits, however, returned occasionally till 10 A.M., when labour pains came on; at 1 A.M. a dead child was expelled; fits and insensibility continued four hours after. 26th: the fits had ceased, and consciousness had returned, though imperfectly; retention of urine. She died five days after, with symptoms of uterine inflammation	Died.
29	Dec. 30, 1833	——, æt. 20, first pregnancy, unmarried; violent convulsions sixteen hours after the commencement of labour; os uteri fully dilated; head squeezed into the brim of the pelvis; ear could not be felt. Venesection, oz. xxx. Fits more violent and frequent after venesection; pulse rapid and feeble; labour pains ceased. Perforation. Head extracted with difficulty; no fits after delivery; sensibility returned the following day	Recovered.

30	May 23, 1834	——, æt. 30, second pregnancy; convulsions appeared eight hours after labour had begun; head impacted; venesection employed; insensibility; pupils dilated; constant convulsive movements of the muscles of the face; pains very violent; rupture of the uterus threatened. Craniotomy. Fits ceased immediately after delivery	Recovered.
31	March 3, 1835	Puerperal convulsions at the end of eighth month; labour soon began; face presentation; pains very violent at short intervals. Forceps tried, but craniotomy at last performed; venesection was performed before delivery; four fits took place after extraction of child; liq. opii sed. was given, after which the fits seemed much slighter, and they gradually went off	Recovered.
32	April, 1835	First labour, full period; a lady, returned home from a dinner party, where she had partaken of a variety of dishes and wines, soon after which labour came on, accompanied with incoherence; violent convulsions then followed. Venesection and enemata were employed; forceps was used, and the child was extracted alive; convulsions continued	Died five hours after delivery.
33	March 1, 1836	Middle-aged woman, addicted to the use of stimulants, attacked with convulsions during the first stage of labour. V.S. ad oz. xxv. without producing good effect; forceps applied, and a dead child extracted. Fits increased in violence after delivery, and continued until she died	Died; vessels of brain were unusually distended with blood.
34	Aug. 16, 1836	Convulsions occurred in a lady after a full dinner of currie and rice; pulse rapid and feeble. V.S. ad oz. viij. Os uteri slightly dilated; labour pains commencing, membranes were ruptured, and the liq. amnii evacuated. C. C. temporibus ad oz. vj. Head of child descended into pelvis; the forceps were applied; the child was easily extracted, but dead; convulsions continued	Died two hours after delivery.
35	Aug. 1836	Puerperal convulsions during labour; had fourteen fits before she was seen; os uteri dilated; head low in pelvis. Forceps applied, and the child extracted with ease; child dead; only one fit after delivery	Recovered.
36	Feb. 8, 1827	Eighth month of third pregnancy; for two weeks had suffered from influenza and headache; attacked with convulsions at end of that period, having seventeen fits in seven hours; oz. xl. of blood were drawn; the fits during the day became more violent, and the muscles were violently affected; pupils dilated. Membranes ruptured; os uteri slightly dilated; at midnight the fits came on again with tremendous violence. Craniotomy was performed, and only one fit occurred after the extraction of child	Recovered.
37	Aug. 15, 1837	Puerperal convulsions; no relief from copious venesection; fits ceased as soon as delivery was completed, which was effected by craniotomy	Recovered.
38	—— 1837	First labour, very protracted; head jammed in brim of pelvis. An injudicious attempt was made to apply the forceps; convulsions threatened; craniotomy performed; labour completed; symptoms subsided	Recovered.
39	Jan. 4, 1838	In a patient, under the care of Mr. Brookes, convulsions took place immediately after the birth of the child; fourth labour; she had been bled copiously by him, and all other means vigorously employed; coma came on; cold extremities; rapid feeble pulse. She died the following day in spite of all treatment	Died.

No.	Date.	Causes, Symptoms, Treatment, and Morbid Appearances.	Result.
40	May 9, 1838	Convulsions occurring after the birth of the child; the patient had been excited at a concert, an hour after she returned from which labour came on; she soon became insensible, with convulsive movements of the muscles of the eyelids and lips. Venesection ad oz. xv. by cupping, and enemata exhibited. She remained unconscious two days, and on the evening of the third sensibility returned	Recovered.
41	Nov. 28, 1838	Drowsiness and headache in the ninth month of the first pregnancy, which continued for two weeks, when she was attacked with convulsions; a severe fit of sickness preceded convulsions, they continued during the day; pulse 84; labour pains commenced; os uteri high up and undilated. V.S. ad oz. xv., and oz. xxx. drawn by cupping from the temples. Next days the fits disappeared, and she was safely delivered; two days after, however, convulsions followed birth of child, but was again bled, and the fits were from that time controlled	Recovered.
42	Feb. 16, 1839	First labour, convulsions of a violent kind; venesection and other remedies employed; head within reach of the forceps, which was applied; convulsions became more severe. Craniotomy was performed, but the convulsions continued, and she died soon after delivery	Died in convulsions.
43	March 13, 1841	Convulsions at the end of first stage of labour, without any premonitory symptoms; pupils dilated; insensibility; uterine action was suspended; oz. xxv. of blood were taken from the arm, and with the aid of sprinkling water in the face, applying ammonia to the nostrils, and dilating the external parts, the child was at last expelled by the natural efforts; fits ceased	Recovered.
44	April 2, 1841	At seventh month of tenth pregnancy, convulsions came on without previous symptoms; muscles of extremities not convulsed; consciousness lost; recovered herself for five hours. Venesection employed, with cathartics and cold to the head. She gradually recovered, and went to the full period	Recovered.
45	Nov. 13, 1841	Convulsions in the seventh month, from alarm at fancying the house was on fire; insensibility; teeth clenched; pupils contracted; breathing slow and stertorous; fits renewed soon after with greater violence; pupils became dilated; head drawn to right side; pulse and respiration became quickened. Venesection had been employed, together with the exhibition of calomel croton oil, enemata, &c.; cupping from the temples. In three hours she was quite insensible, appeared dying from exhaustion; forceps applied, and delivery accomplished: consciousness never returned	Died fifteen hours after delivery.
46	April 16, 1841	Convulsions occurring one day after delivery: fits violent, and at short intervals. When the fits went off, the pupils were contracted, and widely dilated when they were about to return; venesection ad oz. xxxv., and no return afterwards of the fits	Recovered.
47	——	A lady, æt. 26; protracted labour, first child; convulsions suddenly appeared. Venesection ad oz. xxx.; fits continued with great violence, and the head was found to be pressing on the perineum; the forceps was about to be applied, when the child was expelled naturally, and the convulsions ceased; she was in a state of stupor for ten hours	Recovered.

48	—	A lady under the care of Dr. Sims had violent puerperal convulsions in the seventh month of first pregnancy. Two pounds of blood were drawn from the arm; the fits went off, but she had insensibility and headache for a long period; V.S. was again had recourse to, but she continued to suffer until the full period, when she was delivered of a dead child	Recovered.
49	Sept. 30, 1842	A lady under the care of Mr. Cathrow became perfectly insensible the instant after the birth of her ninth child; an hour after the uterus contracted, and the placenta was expelled; there were no convulsions, but all the muscles of the jaw, trunk, and extremities, were rigid; she remained twenty-eight hours in this state without speaking, the hands and feet being drawn inward, the jaws nearly clenched, and the eyeballs drawn upwards; pupils not dilated; pulse 80, and sharp. A few leeches were applied to the head, and cathartics and anti-spasmodics given, when the power of swallowing returned; the same occurrence had taken place, but in a much slighter degree, soon after the birth of every child: she never had hysteria or catalepsy in early life	Recovered.
50	Nov. 23, 1842	A young married lady was attacked with mania on the eighth day after delivery; she soon became wildly delirious, and died six days after in convulsions; the pulse being very rapid and feeble, depletion was not carried to any great extent	Died.
51	Nov. 22, 1842	A lady under the care of Mr. Johnson, Grosvenor Place, became maniacal on the fourteenth day after delivery: in the course of two days she was seized with convulsions, and had a number of severe fits. She recovered completely in a few days, after the repeated application of leeches to the head and region of the uterus, and cathartics	Recovered.
52	Dec. 2, 1842	A lady, æt. 33, was seized with violent convulsions in her first labour, twenty hours after the membranes were ruptured. Venesection, oz. xxxv.: the labour pains continued, and the fits did not return for nearly ten hours; the uterus then having ceased to contract, and several severe fits being experienced, artificial delivery was had recourse to; the fits ceased the instant the child was extracted, and she appeared for several weeks to recover, but afterwards died with symptoms of effusion into the brain	Died.
53	Oct. 28, 1843	A young unmarried woman, St. Marylebone Infirmary, having been long in labour, was seized with convulsions, and during thirteen hours had many violent fits. V.S., oz. xx. Delivered, with the forceps, of a living child, and the fits immediately ceased. Urine drawn off a few hours after was not albuminous in the slightest degree. Consciousness returned in twenty-hours	Recovered.
54	Oct. 30, 1843	A young married hysterical woman, about 26 years of age, delivered, by Mr. Dunn, of a dead child, at 6 P.M. Convulsions soon followed. V.S., oz. xij. and oz. xxv., head shaved, &c. Numerous fits, which became less severe after cupping; and consciousness gradually returned. Urine drawn off highly albuminous, which disappeared in a few days. Headache and œdema of lower extremities during the last month of pregnancy.—30th Nov. Restored to perfect health	Recovered.
		Most of these 54 cases were seen in consultation.	

LECTURE XXXVII.

ON LABOURS COMPLICATED WITH INVERSION AND RUPTURE OF THE UTERUS AND VAGINA, AND EXTRAVASATION OF BLOOD INTO THE LABIA.

In the autumn of 1825, I was consulted by a lady at Odessa, in the ninth month of pregnancy, who was suffering much more than she had ever done before during gestation from pain increased by pressure in the region of the uterus, and febrile symptoms. I recommended her to lose blood from the arm, or to have leeches and fomentations applied to the abdomen; but no antiphlogistic remedies of any kind were employed, and she continued to suffer till the pains of labour commenced. The child was soon expelled, but the midwife in extracting the placenta inverted the uterus, and when I saw the patient about half an hour after, the whole uterus, the entire fundus and body, was hanging out between the thighs like the head of a child; the uterus had in fact been drawn like a stocking or glove completely inside out. The bed and floor were covered with a great quantity of blood, and the lady was expiring with convulsions. On applying my hand over the hypogastrium, the fundus of the uterus could not be felt there in the usual manner; and although the placenta had been entirely detached and removed, there could be no doubt, from the globular shape of the tumour, its peculiar softness and compressibility, its sudden appearance along with the placenta after the birth of the child, the red colour of its investing membrane, from which the blood still continued to ooze, that it was the inverted uterus. By grasping the uterus with the hand, and compressing the upper part firmly with the point of the fingers, there was no difficulty in reducing or reinverting it: a sufficient length of time had not elapsed to allow of the cervix and os uteri contracting to prevent its reduction. The midwife informed me that the placenta was retained, and that little force was employed by her in removing it. This is the only case of complete inversion of the uterus which I have ever seen, and there was no difficulty in the diagnosis, and no doubt about the necessity of immediately replacing the uterus, for if the patient had lived, the reduction of the uterus would have been impossible in a few hours, from the strangulation of the body produced above by the cervix, and inflammation and swelling of the parts. Inversion of the uterus is frequently, if not invariably, the consequence of pulling at the umbilical cord, to extract the placenta immediately after the birth of the child, before the uterus has had time to contract, and while the placenta is still adherent. It is also stated to have happened when the child has been allowed to be rapidly expelled, when the umbilical cord has surrounded the fœtus, or been unusually short. "From the same cause," says Dr. Burns, "or sometimes, perhaps, from sudden pressure of part of the intestines on the fundus uteri, occasioned by a strong contraction of the abdominal muscles, a part of the fundus becomes depressed like a cup, and encroaches on the uterine cavity. This generally rectifies itself, if let alone, but if the cord be pulled, or if there be any tendency in the uterine action to go toward the fundus, as happens when that part is lacerated, and may in like manner occur in the present case, the depression is speedily converted into perfect inversion, which may thus take place spontaneously, and without any fault of the attendant." "It has been supposed," observes Dr. Merriman, "that the exploded practice of dragging at the funis to extract the placenta immediately after the birth of the child, was the principal cause of the misfortune, but I have known an accident to happen when the hand of the operator was introduced for the purpose of effecting the separation, and there can be no doubt that a *spontaneous inversion* has sometimes occurred." I have great difficulty in believing that spontaneous inversion of the uterus can ever take place, for inversion cannot occur if the uterus is contracted even in a slight degree. This can easily be demonstrated, and in examining the bodies of many women who have died soon after delivery, I never saw the uterus in such a state of complete relaxation as to render it possible for the intestines, however forcibly driven against the fundus by the action of the abdominal muscles in vomiting, coughing, or sneezing, to produce the accident. It must be obvious that the uterus cannot be inverted by its own action; there must be something to draw or push it down.

That the uterus, however, has the power of inverting itself, is an opinion which has long been entertained. Astruc says, inversion may be produced by certain convulsive contractions of the uterus which occur in some labours, and which push the fundus through the orifice which it enters, as the intestines are sometimes pushed into one another in cases of violent colic, or intussusception. To explain the successive increase of inversion in some cases, says Desormeaux, we must admit either that the cause of the displacement at first continues to act, or that in the walls of the uterus there is an irregular spasmodic contraction similar to the contractions which produce invagination of the intestinal tube.

The following is quoted by Dr. Merriman as a case of spontaneous inversion of the uterus which occurred in the practice of his uncle. "Mrs. Bishop was so much distorted in the pelvis, that it was found impossible for her to be delivered till the child's head had been lessened by the perforator. Having several times successively undergone this process, she was at last prevailed upon to have premature labour induced when in the eighth month of pregnancy, but the child presenting the nates it was unfortunately dead born. Mrs. Bishop, however, suffered comparatively so little from this labour, and recovered so well and so speedily after it, that in her next pregnancy she was quite impatient for a repetition of the operation. On this occasion the membranes were not pierced, but the connection between the chorion and the uterus was destroyed by means of the common long flat female catheter carefully introduced between them. In consequence of this irritation a muco-sanguineous discharge was produced, and the labour came on in two or three days. The child was born alive and in health, *and the placenta came away without any difficulty, and certainly without any suspicion of injury to the uterus.* The mother recovered in the usual time, and was enabled to suckle her child, a fine boy. Between and seven months after her delivery, and while the child was still living upon the breast, upon some slight strain she suddenly felt something give way within her, and immediately afterwards was sensible of a weight or pressure low down in the vagina, upon which the late Dr. Rowley was immediately sent for, who, upon an examination, found the fundus uteri so low down in the vagina as almost to protrude through the os exterum. Dr. Rowley finding matters in this situation sent for Dr. Merriman, and they jointly endeavoured to re-invert the uterus. Dr. Denman, likewise, and several other accoucheurs, saw the case, but no means that could be used were successful in restoring the parts to their natural state, and the patient remained with her uterus inverted till her death, which occurred in about two years."

The evidence of spontaneous inversion of the uterus having occurred in this case is not satisfactory. There was no pain or hemorrhage after the expulsion of the placenta, or any of the symptoms present which are usually observed in cases of partial inversion of the uterus, and it does not appear that the body was examined after death to demonstrate that it was the uterus which was felt low down in the vagina, and which attempts had been made to replace. On 1st January, 1830, a middle-aged woman, nearly insensible, was brought into the Middlesex Hospital with a great globular tumour covered with blood hanging out of the vagina between the thighs: the patient appeared to suffer great pain when it was touched, and it presented precisely the same appearance which the inverted uterus had done in the case I saw at Odessa. The only difference that I could discover was, the greater density and incompressibility of the mass. Nothing could be ascertained positively respecting the woman, or whether she had been recently delivered. Dr. H. Ley, Sir Charles Bell, and others, examined the patient, and were of opinion that it was a case of inverted uterus, and repeated unsuccessful attempts were made to reduce it. I saw her the following day, when she was dying with symptoms of exhaustion from loss of blood and peritoneal inflammation. On examining the body after death, we found that what was supposed to be an inverted uterus during life was a great fibrous tumour covered with the lining membrane of the uterus, and attached to the cervix by a very thick root. It exactly resembled in size and structure this specimen of large fibrous tumour, growing from the neck of the uterus by a peduncle as thick as the wrist. From this case, and the following related by Dr. Gooch, you will perceive that the diagnosis of completely inverted uterus is not always so simple and easy as some authors would lead us to suppose, or, indeed, can be drawn without a previous knowledge of the history of the patient, and that it is possible the uterus has not been extirpated in all the cases in which the operation has been supposed to have been successfully performed.

Mr. Borrett, surgeon, at Yarmouth, was called to a lady in labour with her sixth child. On his first examination he found a large fleshy tumour within the vagina. The anterior segment in the os uteri was easily felt, but the posterior was occupied and covered by the attachment of the tumour. After the orifice had dilated, and the membranes had burst, the head of the child not descending, Mr. Borrett introduced his hand, brought down the feet, and extracted the child. The placenta was expelled spontaneously. The patient now being delivered, and easy, he left her at 7 in the morning. At 3 in the afternoon he found her in strong pains, as if there was another child, but as the abdomen was flat, and the contracted uterus could be felt in the abdomen, he was satisfied there was not, and gave her an opiate. At 8 o'clock at night he found that the pains continued violent, with a sensation as of a substance coming away, and he discovered a soft round tumour pressing against the outer orifice. What could it be? He would have thought that it was the uterus inverted, but it was the same tumour which he had felt in the morning before the child was born: there was no hemorrhage; the placenta had been expelled spontaneously, and the uterus was distinct in the hypogastric region. He consulted his medical friends in the town, and sent off to Norwich for Mr. Rigby. The pains continued with violent expulsive efforts all night, and the next morning they found her with a languid pulse and pallid countenance: a large fleshy livid tumour had been forced out of the vagina, and every pain brought it more and more in sight: she continued to suffer and to sink through the rest of the day. In the morning Mr. Rigby arrived, but she had expired about half an hour before. As soon as he arrived *he examined the tumour, and was convinced that it was the inverted uterus.* On opening the body next morning, the uterus was found contracted, but its orifice was dragged down as low as the external orifice by a tumour which grew from it by a thick stalk; it was attached to the posterior part of the orifices, and some way up the neck, was of a livid colour, and weighed three pounds and fifteen ounces.

"When the uterus," says Dr. Merriman, "with the placenta attached to it, is drawn in an inverted state without the vagina, no doubt can exist as to the nature of the accident, but if it should happen after the exclusion of the placenta, more difficulty in forming an opinion would arise. The following rules, however, would lead to a correct judgment:—If a globular tumour is found soon after delivery in the vagina, or protruded through the os externum, it must be supposed to be either a polypous excrescence, a prolapsed uterus, or an inverted uterus. If it were a polypus, it would be known by its insensibility, its mobility, and its pedicle, which a careful examination could hardly fail to discover; the edges of the os uteri surrounding the tumour would likewise be perceptible. A prolapsed uterus may always be known by the os uteri being situated at the most depending part of the tumour. The inverted uterus is insensible to the touch, is less moveable than the polypus, has no pedicle, nor a dependent mouth; in a recent state it is entirely covered with a grumous discharge proceeding from numberless bloodvessels upon its whole surface." I have lately seen a case of partial inversion of the uterus mistaken for polypus, and the treatment followed by fatal consequences.

All the systematic works on midwifery contain the histories of cases of complete inversion of the uterus. I have selected the following from many others to illustrate the effects produced by this dangerous accident, and to impress upon you the necessity of immediately detaching the placenta if it adhered, and reducing the uterus. Should you meet with a case in your own practice, it would be a lasting disgrace to you to invert the uterus, whatever the result might be.

In 1684, Mauriceau saw a woman whose uterus had been inverted eight months before by an ignorant midwife, and who was much exhausted by hemorrhage. He found it impossible to reduce the uterus. He relates another case which occurred in 1693, two days before he saw the patient: the uterus was irreducible, and she ultimately died from the pain and discharge.

Giffard's 176th case is entitled, "A delivery where the uterus was inverted and drawn out beyond the labia pudendi, and the placenta adhering to the uterus." "January the 29th, 1730–31, I was, about 8 o'clock in the evening," he says, "sent for to the wife of a brother surgeon in Surrey Street. The child was born about an hour before I came, and the midwife, in attempting to bring away the placenta, had inverted the uterus, for, upon examination, I found the whole body of the uterus, with the placenta, adhering to the fundus, hanging out beyond the labia; there was a great profusion of blood, and the woman was dead before I came. I rebuked the midwife for not sending sooner, and told her that she, through her ignorance, was the immediate cause of the poor woman's death, for, by pulling the string too forcibly, she had drawn out and inverted the womb. Before I examined, the midwife told me the placenta was partly brought out, being ignorant that she had also pulled out the womb; but I showed her her error, that the placenta was all brought out, and only adhered to the fundus uteri, which, as the whole womb was inverted, hung out beyond the labia pudendi. This case should be a caution to all practitioners how they attempt to bring away the placenta, and not to pull the string too rudely, lest they invert and draw out the uterus, by which the woman dies a martyr to their temerity and ignorance, as was too plainly the case in the precedent observation." Chapman's 28th case is similar: — "I was, in the greatest haste, sent for to a woman six miles distant from me, to whom I went with all possible speed, but found on my arrival that she had been dead nearly half an hour. I conjectured she had died from flooding, but upon asking the question was answered in the negative. The midwife told me that the after-birth stuck so fast in one part that she was not able, with all her strength, to take it from her, though she had gained most of it. Upon this I desired the favour of seeing the corpse, which being granted, I found, to my great surprise, that the uterus was inverted, and entirely out of the body, hanging down between the thighs, with the placenta adhering to its fundus, which I separated before the midwife and several matrons there present, and convinced them all of the dismal accident. This woman, it seems, had a very good and easy delivery of the child; but, that born, the midwife pulled hard at the string, and so brought down the uterus, which as soon as she could take hold of, she did, and then pulling with fresh violence, and not being deterred by the loudest cries, the poor miserable woman in a few minutes fell into strong convulsions and deliquiums, and so expired. Thus was a young healthy mother cut off in the bloom of life, and cast into the cold arms of death just as she was about to clasp her first-born in her own."

Smellie was called to a woman who died before his arrival. He found the uterus inverted, pulled quite without the external parts, and the placenta adhered firmly to the fundus. This misfortune was occasioned by the midwife pulling at the placenta with too great force. Mr. Lucas, of Pontefract, sent the following account of a case of inverted uterus to Smellie, which occurred in 1759:—"In April last I was called to a woman just delivered of a live healthy child, and to my surprise found the uterus totally inverted, lying between her thighs, of the size of a large foot-ball. The woman's pulse was weak and unequal, and there was a continued pouring forth of blood from the vessels of the uterus. I apprised the friends of the great danger of so deplorable a case. Nevertheless, with the approbation of a judicious physician, her neighbour, I undertook and succeeded in the reduction, and after gave her gentle anodyne and cordial medicines, and left her, in appearance, better, and tolerably easy. In about half an hour I was again called, and found her speechless, the pulse imperceptible, clammy sweats, respiration deep and slow, and in a few minutes death closed the scene. All the parts were so lax that the uterus had not the power of contraction, for it was lying like a loose piece of tripe, and taken for an excrescence, till I examined it more strictly, and after separating the placenta reduced it into the abdomen."

"On Thursday, the 21st of September, 1820," says Dr. Ramsbotham, "I was desired to be present at the opening of the body of a woman who had died in child-bed, and whose death had raised much clamour in the neighbourhood. I was informed by her accoucheur that she was, to all appearance, safely delivered of her second child, on the Sunday evening, after a natural and quick labour; that he waited for the after-birth the greater part of an hour, before he made any attempt to remove it; and that he then began to pull at the funis, without being able to bring it down. Finding, after some further time, that it did not descend, he attempted to introduce his hand into the uterus; but in this attempt he was foiled. Waiting a little longer, a strong after-pain came on, when he made another trial by the funis; and finding an advance, as he thought, continued to extract, when, to his surprise and alarm, the uterus came out of the parts as large as a child's head, with the placenta adherent to it. Previous to this unfortunate occurrence there had not been much discharge of blood, but now the woman began to flood violently, and soon became faint. He now endeavoured to separate the placenta with his hand, but the violence of the flooding deterred him, and he desisted. Frightened beyond measure at the dilemma into which he had brought himself, and not knowing how to proceed, he sent for a medical friend, at the distance of about a mile, and waited his arrival; the poor woman all the time becoming worse and worse. His friend peeled off the placenta while the uterus was inverted, and during the operation there was an increase of loss. The woman was now in *articulo mortis,* and the uterus was passed into the vagina, but not reverted. I first passed my finger into the vagina, and found it completely filled up by the inverted uterus, which had now become flaccid; during life it had been firm and resistant." Nothing farther was ascertained respecting the relative state of parts in this case. Dr. Ramsbotham has "never seen a case immediately after inversion; but I was desired," he says, "some months ago, to visit a poor woman in Shoreditch parish, three weeks after delivery, to whom the accident had happened at the time of labour, but it had not been detected. The inverted uterus was then about the size of a goose's egg, and regularly contracting. The woman had suffered much from flooding and its consequences, but was recovering."

But inversion of the uterus may be partial or incomplete, so that the fundus and body are retained within the vagina, or protrude very slightly through the os uteri. On the 17th February, 1843, I saw, in consultation, a case of partial inversion of the uterus, fourteen hours after the accident had occurred; and this is the only case of inverted uterus I have seen in London. The patient had been delivered of her first child after an easy labour; but the umbilical cord was not only twisted firmly around the neck, but was remarkably short. The placenta was not expelled for half an hour, and then Mr. —— found it protruding through the external parts with the uterus, to which it still adhered. The placenta was detached from the uterus and removed, and an unsuccessful effort made to reduce the uterus. The discharge of blood which took place was not very profuse, and an opiate having been administered, the patient, though considerably exhausted, suffered little pain during the interval between the delivery and the time I was called to see her. On passing my hand into the vagina, I found its upper part completely occupied with the fundus, and a portion of the body of the uterus, like a soft cricket-ball. So firmly was the neck of the uterus contracted above, that all my efforts, which were long continued, to reduce or push up the inverted uterus, were unavailing, and the uterus remains now, I believe, in the same condition, and the patient suffers continually from pain, profuse menorrhagia, and leucorrhœa, and will continue to suffer from these symptoms from the inverted uterus during the remainder of her life. There is the greatest probability that if the same efforts to reduce the uterus had been made within a few hours after the displacement occurred, they would have been perfectly successful. If you should meet, therefore, with such a case, the symptoms of which would be the absence of the fundus uteri in the hypogastrium, hemorrhage, pain, and the tumour in the vagina, pass the hand at once within the vagina, grasp the inverted portion of the uterus, and firmly compress its upper part with the fingers like a hernial sac, and force it back, and carry the hand forward into the cavity to be sure that the reduction is complete. Remember, that if the attempt fails, the evil speedily becomes irremediable. If the placenta still adheres, some recommend that it should not be removed till we have reduced the uterus; but it is difficult to conceive what benefit can result from pushing back the mass of the placenta into the uterus, and afterwards extracting it. Partial inversion of the uterus, though sometimes immediately fatal by hemorrhage, does not always produce death. In a patient whose case has been related by Dr. Cleghorn, menstruation was performed by the inverted uterus, and she enjoyed tolerable health for twenty years after the accident. When the inverted uterus is irreducible, we ought to palliate the symptoms, of which pain, hemorrhage, and leucorrhœa, are the most distressing, by appropriate remedies. If the life of the patient is greatly endangered by the irritation and discharge, it is justifiable, though it be attended with great danger, to attempt her relief by removing the inverted uterus with a ligature. Numerous cases have been recorded since the days of Ambrose Paré, in which this operation was successfully performed, and there are many others in which attempts to extirpate the inverted uterus have been followed by fatal consequences. It should never be had recourse to if the patient's life can be preserved by any other means. It is unnecessary to detain you by reading any of these cases, fortunate or unfortunate; and the operation, which is nearly the same as tying a polypus of the uterus, will be described hereafter.

ON RUPTURE OF THE UTERUS.

This may take place in any part of the walls of the uterus, but it is most frequently observed in the cervix and towards the sides, or behind in the part corresponding with the promontory of the sacrum. The rent may have a longitudinal direction, or it may take a transverse, or oblique, or curved course. When the cervix uteri is torn, the vagina is most frequently involved in the mischief. The edges of the laceration are usually thin and ragged, and of a red livid colour, as if gangrenous. Where the rupture is extensive, and is situated in the lower part of the uterus, the fœtus, with the placenta and membranes, are sometimes forced out of the cavity of the uterus, through the rent, into the sac of the peritoneum; and if the hand be applied to the abdomen, the different parts of the child can be distinctly felt through the parietes.

In all cases of difficult and protracted labour, where an obstacle is presented to the progress of the child, which the uterus has not power to overcome, the occurrence of fatal rupture of its coats is the accident we have most to dread. It is of no importance whether the disproportion between the child and pelvis depends upon an unfavourable position of the child itself, as in arm and shoulder presentations, hydrocephalus or ascites, distortion of the bones of the pelvis, or tumours of the ovaria, and uterus, malignant disease of the os uteri, or cicatrices of the vagina. The effect produced is the same, whatever the cause of the disproportion may be; and the upper part of the uterus often goes on contracting, until it forces the head of the child, or the whole body and placenta, through its walls into the abdominal cavity among the intestines. The reason why the lower part of the uterus is most frequently lacerated is obvious. In labour it is the fundus and body only which contract; the os and cervix uteri are relaxed. The lower part is in a state of relaxation; and when the head of the child here meets with a resistance from the distorted pelvis, which cannot be overcome, it is forced laterally or posteriorly, by the pressure above, through the walls of the uterus; the coats burst over the head as a small soft glove does when drawn hastily upon the hand, or the hand is roughly pushed into it.

"There is one fact," observes Dr. Collins, "which clearly shows disproportion to be a frequent cause, namely, its being oftener met with in the expulsion of male children; thus, of thirty-four cases which I am about to state, twenty-three of the children were males; and of about twenty mentioned by Dr. M'Keever, fifteen were males. This is satisfactorily accounted for by the greater size of the male head, as proved by accurate measurements made by Dr. Joseph Clarke, which may be seen in his second letter to Dr. Price. Of sixty male and sixty female children born at the full time, Dr. Clarke found that the average circumference in the males was fourteen inches, and in the females thirteen inches and five-eighths; the arch from ear to ear over the crown was seven and a quarter inches in the males, and only seven one-fifth inches in the females. Of the one hundred and twenty examined, there were only six where the circumference of the head exceeded fourteen and a half inches, all of which were males. This difference may appear trifling, but in a practical point of view it is of vast importance, especially where any diminution in the size of the pelvis exists." "The part that most usually gives way is at the junction of the cervix uteri with the vagina, either anteriorly or posteriorly; and, according to my experience, equally in both situations. Of thirty-four cases that occurred in the hospital, in thirteen the injury was in the posterior part; in twelve, anteriorly or posteriorly; in two laterally; in one the mouth of the womb was torn; and in six the particular seat of the laceration was not described. In nine of the thirty-four cases the peritoneal coat of the uterus was uninjured, although the muscular substance of the cervix was extensively ruptured. One singular case occurred in the hospital, precisely similar to that recorded by Dr. J. Clarke, in the Transactions of a Society for the Improvement of Medical and Surgical Knowledge, vol. iii., where the patient died with all the symptoms of ruptured uterus. On examination, however, no rupture could be discovered; but on throwing forward the fundus uteri numerous lacerations were observed in the peritoneal covering of its posterior surface; the injury being confined to this membrane. I have never seen an instance where the fundus was ruptured; nor did Dr. Clarke, during his residence in the hospital, meet with such an occurrence."

Soon after the occurrence of this dangerous accident the labour-pains diminish greatly in strength, or entirely cease, the presenting part of the child recedes, hemorrhage to a greater or less extent takes place from the vagina, and it is evident from the collapse of the features that a serious internal injury has been inflicted on some vital organ; the respiration becomes hurried and laborious, the pulse rapid and feeble, the extremities and the whole surface cold, and vomiting of dark-coloured fluid matters, like coffee-grounds, takes place.

These are the symptoms by which you will recognise laceration of the uterus during labour, and which sometimes takes place without any precursory signs. The pains are not so violent as to lead to any suspicion of what is about to occur; the uterus may be torn extensively before the patient has been twenty-four hours in labour, and where there has been nothing peculiar observed in the character of the pains, and nothing like irregular violent spasmodic contractions of the uterus around the body of the child; the accident may happen without the patient feeling any peculiar pain or sensation of the tearing of the parts within, and where no sound is heard either by herself or by those around her. But if rupture of the uterus has taken place in some cases without any premonitory symptoms, there is reason to believe that it has happened in many where it might have been foreseen and prevented. What can be expected to occur but rupture of the uterus, where the hand is rudely forced up into the cavity of the uterus to turn the child, when the organ is firmly contracted around its body, and the liquor amnii has been long discharged? What else can be looked for but laceration of the uterus and vagina, where the blades of the forceps are pushed up between the head and a deformed pelvis, before the os uteri is more than half dilated? In cases of distorted pelvis, where the head of the child has been allowed to remain many hours jammed in the brim, where the promontory of the sacrum projects in the form of a sharp angle, and the sacro-pubic diameter is much reduced, fatal laceration of the posterior part of the uterus is what we have just reason to apprehend, if we do not, in proper time, relieve the patient by the operation of craniotomy. In a deformed pelvis, where the head has long remained in the same position, and the abdomen is tense, and the different parts of the child can be felt remarkably distinct, and the labour-pains occur at short intervals and with unusual intensity, and produce more suffering than labour-pains usually do, making the patient exclaim that she is about to burst, rupture of the uterus will probably take place, if the labour is allowed to proceed, and no treatment is employed. It was supposed by La Motte, Levret, and Cranz, that the violent movements of the child could rupture the uterus; but the child is entirely passive when this occurs.

Softening of the uterus, by chronic inflammation or some other morbid process, appears occasionally to take place in the latter months of pregnancy, which renders it liable to spontaneous rupture when labour commences. A rent has sometimes occurred, with fatal internal hemorrhage probably from the same cause, as early as the period of quickening, before the uterus had begun to contract. This preparation now upon the table was taken from the body of a woman who died from spontaneous rupture of the uterus, who had been delivered with the forceps in a former labour. The presentation was natural; there was no distortion of the pelvis; but towards the end of the first stage of labour the pains ceased, the presenting part receded beyond the reach of the finger, considerable hemorrhage followed, and dark-coloured vomiting took place, and she died undelivered. This was the history of the case which I received from the midwife. I examined the body, and found the whole contents of the uterus in the peritoneal sac, with very little blood. There was an immense rent in the lower part of the uterus and vagina on the left side, the edge of which was of a dark red colour, and as soft as jelly. This softening had affected a considerable part of the uterus, and was not the result of decomposition. Dr. Merriman has related a similar case; and the uterus which I saw in the recent state had undergone a process of softening in the muscular coat at the part where the laceration existed.

The uterus has been torn by various kinds of external violence applied to the abdomen, and it is reported to have occurred from a violent fit of passion. "A woman," says M. Desormeaux, "has the abdomen strongly pressed between the wall and a carriage, another is thrown down by a horse upon an angular stone or body which is directed against the umbilicus, a third falls with violence upon the abdomen; in all these cases the uterus is ruptured, and the fœtus passes partially or completely into the peritoneal sac. The contusion, in these cases, has sometimes not led to immediate laceration: this has taken place afterwards, on making an effort or raising a weight. In a case of contraction of the cervix uteri, with retention of the placenta, the hand of the practitioner was forced through the coats of the uterus, and the woman soon died."

TREATMENT OF RUPTURE OF THE UTERUS.

Where the head of the child presents, and rupture of the uterus takes place, the best plan is without delay to deliver with the perforator and crotchet; and to prevent the child, during the operation, from passing through the rent into the peritoneal sac, pressure should be made over the fundus uteri, and the opening made in the head in the most gentle manner. I have seen no case of ruptured uterus in which it was possible to deliver with the forceps; and I am not aware that any case of ruptured uterus has been recorded in which a living child was delivered with the forceps. "Efforts have frequently been made to deliver with the forceps in such cases," says Dr. Collins, "but this instrument is seldom applicable, as the introduction of the blades generally forces the head out of our reach; besides, but little would be thus gained, for the child dies shortly after rupture takes place; the dimensions, too, of the pelvis are in such cases for the most part defective; all which circumstances would seem strongly opposed to this mode of delivery. In three of the thirty-four cases above alluded to, attempts were carefully made to deliver with the forceps, but without success." Dr. Burns is of a different opinion. He says the child may live for hours, after rupture of the uterus, if the placenta be not detached, or the hemorrhage great. If the head have entered the pelvis, and be within reach of the forceps, we must cautiously introduce the blades, taking great care not to press up the head or make it recede. From this hazard, and from observing that in such cases the child is generally dead, it has been advised, by good authorities, to perforate the head; but if we have no other inducement to use the perforator, I should consider that, unless the head be high, the forceps would be as safe in this respect.

If the child has passed entirely from the cavity of the uterus into the peritoneal sac, an attempt should be made without delay to extract it, by introducing the hand into the cavity and through the rent in the uterus, grasping the feet and drawing the child back into the uterus, and delivering as in the common operation of turning. In the following case, related by Dr. Blundell, recovery took place under these circumstances. "A woman in this neighbourhood," he says, "had a contraction of the pelvis. It was a case that occurred to one of yourselves, but no blame attached to its management. I was called in, in consequence of collapse of the strength; and when I examined I found the child lying in the peritoneal sac, distinct from the uterus, the aperture of which was contracted, and I found further a large transverse rent opposite to the bladder. Well, in this case, agreeably to the rule, I determined to turn, and for this purpose introduced my hand into the peritoneal sac: I perceived the intestines, felt the beat of the large abdominal arteries, touched the edge of the liver, and ultimately reaching the feet of the child, I withdrew it by the operation of turning, subsequently abstracting the placenta and membranes, the woman recovering in a few weeks afterwards. About five years after the recovery I saw her, not so vigorous as before the accident, but nevertheless tolerably well. On very careful examination at this time the os uteri was found to present the natural characters, and not a vestige of a cicatrix was discoverable in the vagina any where above or below. The rupture, therefore, had been above, in the uterus itself. When, in this case, my hand was introduced to turn the fœtus, the womb, large as a child's head, was felt lying upon the promontory of the sacrum, above and behind the rent."

If a considerable period has elapsed after the accident, and the uterus has contracted so closely that the hand cannot be passed through the orifice and the rent, the best practice would be to leave the case to nature. Some have recommended gastrotomy under these circumstances; but the child is already dead, and the mother could hardly be expected to survive after such an operation. But I had nearly forgotten to mention that the Cæsarean section was actually proposed by Cranz, where, from the size of the head and dimensions of the pelvis, there were symptoms merely threatening rupture of the uterus, and before rupture had positively taken place; and that he considered it a great honour to have been the first to make this barbarous proposal. "J'aurais encore ici la gloire," he says, "d'avoir proposé le premier l'usage d'un moyen dont personne avant moi n'avoit eu l'idée pour le cas dont il s'agit."

If the fœtus has escaped into the peritoneal cavity, and is allowed to remain there, the patient may recover without gastrotomy, and the fœtus be afterwards discharged through an ulcerated opening in the parietes of the abdomen. It is probable that the greater number of cases recorded by authors, in which this event took place, were cases of extra-uterine gestation, and that the fœtus had never been within the cavity of the uterus. But in Dr. Cheston's case the fœtus had undoubtedly been within the cavity of the uterus, for he states that, after acute labour-pains, symptoms of ruptured uterus took place, and that the presenting part receded. The fœtus remained many years in the abdomen, and became covered with a layer of calcareous matter.

In 1814, Dr. M'Keever published an interesting case of recovery after lacerated uterus, which shows the power which nature possesses in some individuals to repair the most dreadful injuries. A stout young woman had the uterus ruptured during labour which continued nearly thirty-hours, and nearly four feet of intestine protruded into the vagina, and sloughed off on the 16th day after the accident. For about two years the patient voided all the fæces through the breech of the uterus. At the conclusion of that period the fæces took their natural course. Eighteen months afterwards the woman conceived. and has since at the full time been safely delivered of a small feeble child. I have already related to you the history of a case of rupture of the uterus from hydrocephalus in the fœtus, similar in some respects to the preceding case, which fell under my observation on the 22d of June, 1842. If the patient is delivered after rupture of the uterus, and survives the immediate shock of the accident, it should be remembered that she is liable to perish from an attack of peritoneal inflammation and suppuration in the neighbourhood of the uterus.

EXTRAVASATION OF BLOOD INTO THE LABIA.

One of the labia pudendi sometimes becomes suddenly and excessively distended with blood during labour, or soon after the birth of the child, from rupture of varicose veins or other vessels. The labium becomes of a dark livid colour, and as large as the head of a child, in a very short time, and a great quantity of blood is sometimes lost, from the inner surface of the labium becoming lacerated. Its situation on one side, and its dark colour, will prevent you from supposing that it is the fœtal membranes protruding, or a hernial tumour. Dr. Dewees states, that if the bursting of the inner surface of the labium does not take place, in the first instance, the tumour is sure to yield in a short time from gangrene. When the parts sloughs, he says, it exposes a large surface of coagulated blood, which quickly becomes decomposed and fœtid. If the parts do not give way the pain is agonising: fever of an active kind is excited, delirium takes place, and the patient's life is greatly endangered. Her sufferings are augmented by the retention of urine, and nothing gives relief but a free incision into the tumour to give vent to the extravasated blood. This should be done, he thinks, before the process of ulceration has commenced, or the chance of bursting. The urine should then be drawn off by pressing the enlarged labium to one side, and introducing the catheter, and warm fomentations to the hands and feet; but the progress of the symptoms is sometimes so rapid as scarcely to allow time for the administration of remedies. In the Archives Générales de Médecine, August, 1834, several cases are related. A woman, aged 41, pregnant with her fifth child, was seized with labour pains, which gradually abated after the liquor amnii was discharged. In a short time, however, a violent pain was experienced, and the left labium became enormously swollen and discoloured. The tumour soon burst, and a great quantity of dark-coloured blood was disharged. She became exhausted, and soon died in convulsions. There was a laceration on the inner surface of the labium an inch and a half in length, through which the finger could be passed into a large cavity containing coagulated blood. On the right labium and inner surface of both thighs there were varicose veins. In another case the labour had lasted upwards of twenty hours, when the right labium was found greatly distended and discoloured, and blood was dropping from its inner surface. The patient died in a quarter of an hour. A rent, two inches in length, was found on the inner surface of the right labium, which led into a cavity nearly four inches in circumference, and which extended under the os pubis, and on the outer side of the ascending ramus: at the bottom of this sac was seen the ruptured orifice of the varix. There was distortion of the pelvis. Dr. Elbert was summoned to the assistance of another woman in labour, but she had just expired on reaching the house. She was 34 years of age, and the mother of seven children. The labour had begun favourably, and the pains had been at first regular and steady. On a sudden the woman felt that a quantity of fluid was running away from her, but she thought it was the waters; the nurse, however, found that it was blood. In half an hour the patient expired. On the right labium, which was swollen and livid, were seen three ragged wounds; through each of these the finger could be passed into a large cavity, which still contained a quantity of black coagulated blood. On the left labium and both thighs were numerous distended veins.

In all these cases death took place before delivery, and the children were dead when extracted. In the fourth case the delivery had taken place before the rupture of the varicose swelling. Immediately after the expulsion of the child, the external parts became enormously swollen, and at length the integuments gave way at one point, and an alarming hemorrhage took place. Professor Rieche immediately applied rags dipped in cold water, which arrested the flow of blood, and the exhausted strength of the patient was then supported by sinapisms to both legs, and by a cordial medicine exhibited frequently. Another woman, æt. 46, mother of eight children, suddenly expired in labour. Dr. Carus found the head of the child detained in the outlet of the pelvis: he delivered it with the forceps, but not without considerable difficulty; for the pelvis was confined. On introducing the hand afterwards to extract the placenta, he found near the cervix of the uterus a ruptured varicose tumour; the rent was about 1½ inch long, and the extent of the cavity about two inches all round.

On the 13th of January, 1840, a patient of the Saint Marylebone Infirmary, with slight distortion of the pelvis, was in labour, and the face presented and became jammed in the brim. Violent uterine action was allowed to continue many hours, the head being too high for the forceps, when the right labium became enormously distended with blood, and burst on the inner surface, and a great hemorrhage took place. When I first saw the patient the hemorrhage was supposed to proceed from the uterus, but on making an examination, I felt the labium immensely enlarged, and my wrist was covered with blood. It was evident that the patient would soon have died had the hemorrhage not been arrested. The discharge of blood was checked by strong pressure with a sponge over the rent, while I opened and extracted the head. Cold applications were afterwards made to the part, and, when the hemorrhage had ceased, emollient poultices, and she recovered rapidly. On the 2d November, 1841, I saw in consultation Mrs. ——, who was far advanced in pregnancy, and had suffered much during the latter months from a varicose state of the veins of the right foot, leg, thigh, and labium. For six weeks the right labium had been much enlarged, and a painful circumscribed swelling had formed in it like an abscess, with throbbing, which led Mr. —— to open it with a lancet: when this was done a small quantity of venous blood escaped, but no pus; and soon after the labium began to enlarge and assume a dark livid colour. It had attained nearly the size of a child's head when I saw the patient, and was as black as one's hat, and was so tense that it threatened to burst. It was evident that hemorrhage was still going on. To arrest the discharge the labium was covered with pieces of ice with the best effect, for the effusion soon ceased, and on the following morning the labour came on, and was completed by the natural efforts without a renewal of the hemorrhage. Rapid absorption of the extravasated blood took place, and the patient speedily recovered.

In the next lecture I shall proceed to consider the Diseases of Puerperal Women, the most important of which is Inflammation of the Uterine System.

LECTURE XXXVIII.

ON INFLAMMATION OF THE UTERINE SYSTEM IN PUERPERAL WOMEN.

I PROCEED now to consider the various alterations of structure produced by inflammation in the uterine organs subsequent to parturition — to point out the local and constitutional symptoms by which these morbid conditions are characterised during life, and distinguished from some other affections to which they bear a resemblance — to investigate the nature and causes of this most fatal disease — and to describe the treatment adapted to the different varieties of uterine inflammation, and the most important means to be adopted for its prevention. The following are the principal modifications of inflammation of the uterus and its appendages in puerperal women, as stated in the fifteenth volume of the Medico-Chirurgical Transactions: — *First.* Inflammation of the peritoneal covering of the uterus, and of the general peritoneal sac. *Secondly.* Inflammation of the uterine appendages; the ovaria, fallopian tubes, and broad ligaments. *Thirdly.* Inflammation of the muscular coat of the uterus. *Fourthly.* Inflammation and suppuration of the veins and absorbent vessels of these organs. These varieties of uterine inflammation may occur wholly independent of each other, although they are most frequently met with in combination. Peritonitis seldom occurs without some degree of inflammation of the uterine appendages; but both these textures may be severely affected when the muscular coat of the uterus, and the veins and absorbents, are wholly exempt from disease. The vascular and muscular tissues of the uterus are also liable to severe attacks of inflammation, without any corresponding affection of the peritoneum by which they are covered, though it most frequently happens that inflammation, when excited either in the veins, absorbents, or muscular coat, involves also the peritoneum. In the organs of respiration similar varieties of inflammation may be observed, and the pleura, pulmonary texture, and the mucous membrane lining the air-passages, may all be separately or simultaneously involved in the same attack. A similar observation may be extended to the brain and its membranes, and to the whole of the digestive organs; and the symptoms which characterise the inflammation of the different tissues of which these organs are composed have been more accurately determined than formerly by recent observers.

I. INFLAMMATION OF THE PERITONEAL COVERING OF THE UTERUS AND OF THE PERITONEAL SAC, OR PUERPERAL PERITONITIS.

The effects produced by inflammation of the peritoneal coat of the uterus in puerperal women do not essentially differ from those produced by common peritonitis in the male sex. Where inflamed, the peritoneum becomes red, vascular, apparently thickened, and a secretion or substance of a yellow colour—in fact, lymph in the form of false membrane—is thrown out, producing adhesion of the abdominal viscera to one another; or a turbid, serous, whey-coloured, or red fluid, mixed with shreds of albumen or pus, is effused in greater or smaller quantity into the cavity of the peritoneum. The omentum is often of a deep red colour, highly vascular, and closely adherent to the intestines, and sometimes to the fundus uteri by lymph. Puerperal peritonitis commences in the peritoneal covering of the uterus, often in the portion which invests the body and cervix behind, and extends from thence with greater or lesser rapidity, according to the severity of the attack, to the general peritoneal membrane. In some fatal cases the inflammation is in a great degree confined to the uterus, and it is generally most severe in this organ, or in the parts immediately contiguous. Even when it has extended to the other viscera, and affected them most severely, the peritoneum of the uterus most frequently, if not invariably, exhibits signs of recent inflammation. The lymph is for the most part poured out in thicker masses around the uterus than in any other situation; and this viscus has seemed to suffer in the greatest degree from the violence of the inflammation. Sometimes considerable deposits of pus are formed beneath the peritoneal coat of the uterus, which are either prominent and circumscribed, or diffused throughout the cellular membrane. These are most frequently met with at the part where the peritoneum is reflected from the uterus and vagina to the rectum.

Inflammation of the peritoneal coat of the uterus is characterised by great tenderness of the surface of the organ, increased on pressure, and by pyrexia more or less severe. In every instance which has come under my observation, where the patient was seen soon after the invasion of the disease, on a careful examination of the uterine region there has been more or less pain in it, increased by pressure, with constitutional disturbance; though it must be admitted that the pain and febrile symptoms have varied greatly in intensity. When the attack of peritonitis is severe, the patient commonly lies upon the back, with the knees slightly drawn up to the abdomen. At the onset of the disease the abdomen is generally soft and flaccid, and, except in the uterine region, not affected by pressure. Though an enlarged and painful state of the uterus be never altogether wanting, yet the pain often undergoes exacerbations similar to after-pains, and is often mistaken for them by careless observers, and the disease is thus overlooked till a great part of the peritoneal sac is inflamed, and the case in consequence is rendered hopeless. The whole abdomen then becomes swollen and tympanitic, and the pain either wholly subsides, or becomes still more intense than at the commencement. Vomiting of black or dark green-coloured fluid follows, the pulse becomes extremely rapid and feeble, the tongue dry and brown, the lips and teeth are covered with dark sordes, and diarrhœa frequently supervenes, and death follows at no very remote period. The invasion of pain in the uterus is sometimes sudden; at other times the ordinary increased sensibility of the uterus, subsequent to the efforts of natural labour, or after-pains, passes slowly into the acute pain, increased by pressure, which is the great characteristic symptom of uterine inflammation at the onset. Most frequently the accession of the disease is marked by rigors, partial or general; sometimes so slight as scarcely to be perceived by the patient, at other times so violent as to produce succussions of the whole body. The cold shivering after a longer or shorter duration passes away, and is succeeded by great heat of the surface, acceleration of the pulse and of the respiration, thirst, sometimes nausea and vomiting, and intense pain across the forehead. The rigors precede, accompany, or follow the increased sensibility of the uterus. In some of the most severe cases there has been no distinct rigor; but a quick pulse, hot skin, and hurried respiration, have rapidly succeeded to the uterine pain. In some of the most unfavourable cases, the extremities have been cold, and the countenance anxious and pallid, after the disease has been completely formed. There is no uniformity in the state of the tongue in puerperal peritonitis. It is sometimes covered with a thin, moist, white, or cream-like film, at other times it is red in the centre, with a thick yellow, or white fur, on the edges. The lochia are often completely suppressed, in other cases only diminished in quantity. The mammæ usually become flaccid, yet in some fatal cases the milk has been secreted till a short period before death. Puerperal peritonitis may be confounded with the irregular contractions of the uterus which constitute after-pains and hysteralgia, and it must be admitted that in some cases it is difficult to draw a line of distinction between them. Where the pulse is accelerated, the remission of pain incomplete, the lochia scanty or suppressed, the fundus uteri felt large and hard, and painful on pressure, or the whole hypogastric region unusually tender when touched, in a large proportion of cases you will arrive at a correct diagnosis by considering the peritoneal coat of the uterus, or its deeper-seated tissues, in a state of congestion or inflammation, and employing antiphlogistic treatment. There are few puerperal women, except those of a feeble and irritable constitution, or who have been previously exhausted by hemorrhage, or some chronic disease, who are seriously injured by cautious depletion, local or general; and where death has followed the abstraction of sixteen or twenty ounces of blood from the arm the fatal result may fairly be attributed to the disease, and to the neglect of the remedy rather than its abuse. The annexed table furnishes the best proof you can have of the truth of this statement. By looking over the abstract of the cases contained in it, you will observe that a great proportion of the women, above one half, were attacked on the second and third days after delivery, and that in most of them where the disease proved fatal the symptoms occurred in the following order: rigors, uterine pain, suppression of the lochia, headache, tenderness and distension of the whole abdomen, vomiting, diarrhœa, delirium, and cessation of pain before death.

II. INFLAMMATION OF THE UTERINE APPENDAGES, OVARIA, FALLOPIAN TUBES, AND BROAD LIGAMENTS.

I have seen the uterine appendages free from disease in one case only, where the peritoneal covering of the uterus has been inflamed, but frequently the peritoneum has been slightly affected where the appendages of the uterus have been extensively disorganised. The surface of the broad ligaments, ovaria, and fallopian tubes, have been red and vascular, and partially or completely imbedded in lymph or pus. The outer extremities of the fallopian tubes have been of a deep red colour and softened, and deposits of pus in a diffused or circumscribed form have taken place between their coats or within their canals. Between the folds of the broad ligaments effusions of serous or purulent fluids have also been found. Numerous important changes have likewise been observed in the structure of the ovaria. Their peritoneal surface has often been red, vascular, and imbedded in lymph, without any visible alteration of the parenchymatous structure, or their whole volume has been greatly enlarged, swollen, red, and pulpy; blood has been effused into the Graafian vesicles, or around them, and circumscribed deposits of pus have been often dispersed throughout the substance of the enlarged ovaria. In several cases the structure of the ovaria has been reduced to a soft vascular flocculent pulp, no traces of their original organization being left. These morbid appearances have been represented in the drawings now before you. The ovarium in one instance was converted into a large purulent cyst, which had contracted adhesions with the abdominal parietes, and discharged its contents exteriorly through an ulcerated opening. In another case, which proved fatal, the inflammation had extended to the cellular membrane exterior to the peritoneum, and had given rise to an extensive purulent deposit in the course of the psoas and iliacus internus muscles, as in lumbar abscess. In two other individuals, who ultimately recovered, the purulent deposit formed in the situation of the psoas and iliacus internus muscle, or about the neighbourhood of the uterus, made its way through an ulcerated opening in the upper part of the thigh: contraction of the thigh on the trunk took place in both these cases, and continued for several months, but disappeared on the recovery of the patients. In another recent case, a great quantity of pus, after uterine inflammation, escaped through the anterior wall of the vagina, and the patient recovered. In another, after puerperal peritonitis, an ulcerated opening formed in the rectum, and a great quantity of pus escaped, after which the symptoms subsided. In several cases I have seen a great discharge of pus take place through an opening made with the lancet in the walls of the abdomen, between the umbilicus and ilium, and perfect recovery to succeed. Inflammation of the uterine appendages being generally combined with peritonitis to a greater or lesser extent, it is often difficult to establish a diagnosis between these varieties of uterine inflammation. The pain is, however, usually less acute than in peritonitis, and is principally situated in one or other of the iliac fossæ, extending from them to the loins, anus, and thighs. On pressure the pain is chiefly experienced in the lateral parts of the hypogastrium. The constitutional symptoms at the onset of the attack do not materially differ from those which mark the accession of peritonitis, which are often accompanied with strong febrile reaction, which passes speedily away, and is succeeded by prostration of strength, and the other symptoms which characterise inflammation of the venous and muscular tissues of the uterus.

III. INFLAMMATION AND SOFTENING OF THE MUSCULAR COAT OF THE UTERUS.

The dark-coloured mucous layer, which usually coats the inner surface of the uterus after delivery, has been supposed to be the result of gangrenous inflammation, and has been described as such by some pathologists. This ought not, however, to be confounded with the changes produced by inflammation of the inner membrane of the uterus, when it becomes softened or wholly disorganized, like the mucous linings of the stomach and intestines in certain inflammatory diseases. In several cases the internal membrane of the uterus was soft and flocculent, and had undergone changes similar in appearance to those which are produced in it by long maceration. In other cases, not only has the internal coat been disorganized, but the muscular tissue, to a considerable depth, or even through its entire substance to the peritoneum, has been of a dark purple, greyish, or yellowish hue, and so softened in texture as to be torn by the gentlest efforts made in removing the parts from the body. The peritoneum covering the inflamed portion of the muscular coat of the uterus has also been affected, and lymph has been thrown out over its surface as in common peritonitis; or the peritoneum has become of a yellow, red, or livid colour, no albumen having been deposited on its surface. The peritoneum has also been softened where the subjacent tissue has been little, if at all, affected; more frequently, however, the softening has proceeded from the internal surface of the uterus to its peritoneal, and the muscular has been extensively disorganized without a corresponding lesion of the peritoneal coat of the uterus. Inflammation and softening of the uterus have, in some cases, affected the muscular tissue of the fundus, body, and cervix of the uterus; in others, these changes have been limited to the part where the placenta has adhered, which has become unusually thin, and reduced to a pulpy state. Small abscesses have been formed, in a few instances, in the muscular tissue of the uterus, without any perceptible change in the surrounding substance of the organ, while in other cases every trace of muscular fibre has been lost. Pain of the hypogastrium, diminution or suppression of the lochial discharge, and rigors, with rapid pulse, are the most frequent symptoms of the disease. The countenance becomes pallid, and is usually expressive of great anxiety and distress. There is often severe headache, with delirium, and other affections of the brain and nervous system; and so violent have these been, in some cases, that the local affection of the uterus has completely escaped detection during life. The skin is hot and dry, and sometimes of a peculiar sallow tinge; the pulse is rapid and feeble; the respiration hurried, with remarkable prostration of strength; the tongue becomes foul; the lips covered with sordes; occasional vomiting is experienced. The progress of the disease in some cases is rapid; in others, it runs its course more slowly, being protracted to the eighth or tenth day. It must be admitted that the diagnosis of this variety of uterine inflammation, particularly where it is complicated with peritonitis or inflammation of the veins, which is frequently the case, is difficult, or even impossible. If the attack of inflammation of the muscular coat be sudden and violent, it becomes so speedily complicated with peritonitis, more or less acute, that the symptoms are readily confounded together, and it is impossible to distinguish with certainty the symptoms which are to be referred to peritonitis, and those which result from the affection of the muscular coat. The prostration of strength, the alteration of the features, which often exists from the commencement, the feebleness and rapidity of the pulse, the irregular fœtid state of the lochia, are not such constant symptoms as to be pathognomonic, and may arise from other causes. Hence it will appear that the most attentive consideration of the phenomena will not lead us to any certain conclusion as to the nature of the affection; and, as in many other diseases, we can only determine its precise character by the history of its origin and progress, and by the alteration of structure discovered after death. In all the cases of this affection which I have observed, the resources of nature and of art have proved equally unavailing in arresting its fatal course. The active inflammatory symptoms which commonly manifest themselves at the commencement of the attack pass speedily away, whatever plan of treatment be adopted, and are rapidly succeeded by symptoms of exhaustion. Where the disease is not complicated with inflammation of the peritoneum, the symptoms are not such as to indicate the necessity for the employment of venesection; and in one case where it was adopted freely, the abstraction of the blood was followed by speedy death. In other cases, where the opposite plan of treatment was had recourse to, the fatal result seemed to be less speedy, though equally certain. This destructive form of uterine inflammation has been described by several German and French pathologists; Astruc, Vigarous, and Primrose, probably refer to it when they state that the uterus is liable to be attacked with gangrene and sphacelus; Ponteau and Gastellier have related cases in which gangrene of the uterus followed acute inflammation of the organ. In 1750 an epidemic attacked many puerperal women, which was characterised by severe abdominal pain and tumefaction of the hypogastrium. On examining the bodies of two of these women, Ponteau states that the uterus was found very large; the internal membrane was soft and black, and the substance of the parietes was of a livid red colour, and in a gangrenous state. Boer, of Vienna, has described this affection under the term putrescence of the uterus, and has observed its frequent occurrence in particular epidemics. Luroth and Danyau have more recently published detailed accounts of this destructive disease. Two hundred and twenty-two women died in the Maternité of Paris in 1829; and in examining their bodies M. Tonellé found the muscular tissue of the uterus softened in forty-nine. He states that softening of the uterus, after occurring frequently in the first half of the year 1829, and particularly about January, disappeared entirely in the months of July and August, which were characterised in a remarkable manner by the frequency of inflammation of the veins of the uterus. Afterwards it began to occur, often with great violence, in September and October, and again disappeared in November and December.

Boer and Luroth have, I think, erroneously described the different degrees of this affection as constituting two essentially distinct diseases. M. Tonellé also states that the disorder at Paris assumed two different forms — the softening of the uterus, properly so called, and the putrescence. In form the softening affected only the internal surface of the uterus, and it presented itself under the appearance of irregular superficial patches of red or brown colour, which occupied almost all the points of this surface. Its limits were not determined, the diseased tissue passing by insensible gradations or shades into the healthy tissue. In the second species the softening extended deep into the substance of the uterus; it occupied sometimes the whole thickness of the body and cervix of the uterus. The tissue of this organ was so softened that the fingers could not seize it without passing through all its parts. The superficial softening was combined almost constantly with some alteration of structure, the result of peritonitis, metritis, or inflammation of the veins; and it did not appear that the existence of these had a very sensible influence on the progress of the symptoms. The softening in the second degree was also sometimes combined with other derangements; but it formed usually the principal alteration, often the only one, and invariably impressed upon the disease the most decided typhoid character.

ON INFLAMMATION OF THE VEINS AND ABSORBENT VESSELS OF THE UTERUS IN PUERPERAL WOMEN.

Inflammation of the venous system was first described by Mr. Hunter, in the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, in 1793. "I have found," he observes, "in all violent inflammations of the cellular membrane, whether spontaneous or in consequence of accident, as in compound fractures, or of surgical operations, as in the removal of an extremity, that the coats of the larger veins passing through the inflamed part become also considerably inflamed, and that their inner surface takes on the adhesive, suppurative, and ulcerative inflammation. I have found in many places of the veins adhesions, in others matter, and in others ulceration. Under such circumstances the veins would have abscesses formed in them, if the matter did not find in many cases an easy passage to the heart, along with the circulating blood, so as to prevent the accumulation of pus; but this ready passage of the matter into the common circulation does not always happen. It is in some cases prevented by the adhesive inflammation taking place in the vein between the place of suppuration and the heart, so that an abscess is formed, as will be further observed: where the inflammation is most violent, there we find the vein most inflamed; there, also, after suppuration, we find the purest pus, and as we trace the vessels from this part either further from or nearer to the heart, we find the pus more and more mixed with blood, and having more and more of the coagulated parts of the blood in it. As these appearances are only to be seen in dead bodies, they cannot be described but from thence; but it is so common a case, that I have hardly ever seen an instance of suppuration in any part furnished with large veins, where the appearances are not evident after death. I have found them in the bodies of those who have died from amputation, compound fractures, and mortification." These circumstances led Mr. Hunter to suspect that the fatal effects sometimes succeeding to venesection, which had usually been attributed to injuries of tendons and nerves, depended on inflammation of the internal coats of the veins. He observed similar appearances in the veins of the arm after bleeding; and he states that in many cases the inflammation and suppuration are not confined to the part, from the adhesion not having taken place, and that an abscess is frequently formed which occupies a considerable length of the vein, both between the wound and the heart, and between the wound and the extreme parts. Upon examining the arm of a man who died in St. George's Hospital, Mr. Hunter found the veins, both above and below the orifice, in many places united by the adhesive inflammation. He also found in many parts of the veins that suppuration had begun as on inflamed surfaces, but had not arrived at ulceration, and in several other places ulceration had taken place, so as to have destroyed that surface next the skin, and a circumscribed abscess was formed. The veins near to the axilla had taken on suppuration, beyond which adhesion had not formed, and thus had given a free passage for the matter into the circulation, of which, most probably, the patient died. "Many horses," he says, "die of this disease, but what is the peculiar circumstance which occasions their death I have not been able to determine; it may either be that the inflammation extends itself to the heart, or that the matter secreted from the inside of the vein passes along the tubes in considerable quantity to the heart, and mixes with the blood. I am inclined to believe that the exposure of cavities of the larger veins, in cases of accidents, and also of operations, is often the cause of many of the extensive inflammations which sometimes attend these cases, and, indeed, may be the reason why inflammations extend or spread at all beyond the sphere of continued sympathy." It does not appear that Mr. Hunter was aware of the resemblance which exists between the part of the uterus where the placenta adhered, and an amputated or wounded limb, and their liability to the same diseases, and that he had ever observed inflammation of the uterine veins in puerperal women. It is singular that this important variety of uterine inflammation should have altogether escaped his notice, considering the accuracy of the description which he has given of puerperal peritonitis, and the correct opinion he had formed respecting its nature. "The peritoneum," he says, "is more subject to spontaneous inflammation than most membranes, but not so much so as the pleura. The symptoms are great pain, and soreness upon pressure; fever much higher than in an affection of a common part; the disease also runs much quicker through its stages; it has been often taken for a fever, and the pain, &c., looked on only as a symptom; in some cases a diarrhœa comes on, and at others costiveness: both these I am inclined to think, may be set down as sympathetic affections. It is difficult to say at first whether it is simple inflammation or erysipelatous; if it is the latter, the pulse will soon sink, although at first it might have been otherwise, from nature having been roused at the first consciousness of disease attacking so important a part. In simple inflammation of the peritoneum I need say nothing of the importance of early and plentiful bleeding; in the erysipelatous, some consideration must be had: as, on the one hand, this species of inflammation sinks the patient, and, on the other, death must be the consequence of suppuration. If we were confident of its being erysipelatous, how far bleeding lessens erysipelas I do not know; peritoneal inflammation *happens a few days after child-birth, which has been called puerperal fever; the fever is only a sympathetic affection, in consequence of the inflammation of the peritoneum, although this last has been thought only a symptom of fever.*"

In a volume of Essays on the Management of Pregnancy and Labour, and on the Inflammatory and Febrile Diseases of Lying-in Women, published by Dr. John Clarke in 1793, he observes that, "upon cutting into the substance of the uterus, pus is often found, which, in all the cases I have met with, is situated in the large veins of the part." In dissecting the body of a woman who died several weeks after delivery, Mr. Wilson found the uterine veins thickened and partially obliterated; the iliac, emulgent, and spermatic veins exhibited the usual effects produced by inflammation; the coats of the vena cava were thickened and adherent to the surrounding parts, and the vessel which was contracted below the entrance of the hepatic, contained about four ounces of pus. Mr. Wilson met with similar appearances in the bodies of two women who died soon after parturition, and the uterine vessels also contained pus. These facts were stated in the third volume of the same work in which Mr. Hunter's paper appeared in 1793. In 1797, the attention of pathologists being now directed to the subject, Meckel communicated to Sasse the history of a case of puerperal fever, in which he found, on dissection, "all the veins which surround the uterus, the hypogastric trunks, and the vena cava, enlarged in volume; the place where the placenta had adhered was distinguished by a fungous mass. The veins, whose exterior appearance had arrested the attention, were examined with care: they were separated from the surrounding cellular substance, and in this state the whole system of uterine and spermatic veins presented an extraordinary augmentation of the calibre of the vessels, and thickness of their coats; when opened, there escaped from them a true purulent fluid. The vena cava, where the right renal vein entered, presented a resisting tumefaction; and when opened, its coats were double the natural thickness, and the cavity was filled with pus, and a polypus formed of pseudo-membranous and puriform concretions. "Many circumstances," Meckel observes, "might contribute to render the disease mortal; but is it not fair," he inquires, "to attribute the occurrence of the fatal termination of the case to the profound lesion of the veins?" Uterine phlebitis, from this period till 1820, appears to have almost completely escaped observation, when it was thus described by Dr. Burns. "Pus is often contained in the ovaria and tubes, and sinuses of the uterus; he says, mortification is an extremely rare termination. This is a fact of which my dissections convince me, and it is further confirmed by the opinion of Dr. Clarke. Little or no serous effusion takes place in the abdomen. In some cases the veins participate very extensively in the disease, and become inflamed to a great distance. Thus inflammation may spread to the heart or liver, or down along the veins of one or both thighs. This is attended with great and debilitating fever, and much pain in the course of the affected veins, which, after death, are found inflamed, thickened, or filled with pus. The treatment of this complication must be conducted on the antiphlogistic plan, and a knowledge of the nature of the disease will call for early attention to local pain attended with fever." In 1825, Ribes described a fatal case of puerperal peritonitis, in which the abdominal veins were filled with a sanious pus; and it was the presence of this purulent fluid in the veins, he thought, which rendered the diseases of the uterus, in puerperal women, so rapidly fatal. In 1826, M. Louis observed a fatal case of uterine phlebitis; and in the same year M. Dance published the histories of several cases, in his Inaugural Dissertation at Paris. If you look at the tabular view at the end of the present lecture, you will see that 18 cases of uterine inflammation occurred between the 6th of March and the middle of September, 1827, and that in the greater number of these there was acute pain of the uterus, with strong febrile symptoms, and that recovery generally followed the early and speedy adoption of the antiphlogistic treatment. I was induced to believe, from what I observed at this period, that inflammation of the peritoneum, and the disease termed by authors puerperal fever, child-bed fever, the epidemic disease of lying-in women, were the same affections, and that bloodletting, mercury, antimony, opium, and cathartics, would generally succeed in procuring relief. But in the month of September of the same year, Case No. 21 occurred, and the symptoms and appearances on dissection completely overturned this opinion. On the second day after a natural labour, 28th September, 1827, and when apparently recovering favourably, this patient (Somerville) was attacked with a severe rigor, which was speedily followed by acute pain in the hypogastrium and loins, suppression of the lochia, nausea, urgent thirst, and increased heat of skin. She was soon delirious and slightly comatose, and made no complaint when roused but of pain in the left iliac region. The abdomen was unusually distended, but neither hard nor tense; and pressure produced no uneasiness, except the left ilium and umbilicus. The uterus was still felt above the brim of the pelvis, large and hard, and painful on pressure. The milk and lochia were suppressed, the countenance pale and anxious, pulse 130, weak, and intermitting. On the 22d the stupor continued to increase, the abdomen was more distended and painful, the respiration more hurried and laborious, and the pulse extremely quick, feeble, and intermitting. A vein was opened in the arm when she was first attacked, but more than a tea-cupful of blood could not be procured. On examining the body on the 23d, the intestines were seen slightly distended with gas, but there was no trace of inflammation on any part of their peritoneal surface, and no fluid effused into the sac of the peritoneum. On turning aside the intestines, the left spermatic vein, from the uterus to its junction with the left emulgent vein, was seen distended to nearly the size of the vena cava itself. The cellular membrane surrounding it was highly vascular, and adhered closely to its external surface. On laying open the vein, a dark-coloured firm coagulum of blood filled it throughout its whole course, but it did not adhere to its internal surface, except near its termination, where it was lined with a layer of lymph. The coats of the vein were thicker and firmer than usual, and the internal membrane was of a bright scarlet colour, as was that lining the veins of the uterus near the fundus on the left side, the part to which the placenta had been attached. The substance of the uterus in this situation was of a dark livid colour, remarkably soft in its texture, and easily torn with the fingers. The corresponding ovary and fallopian tube were also very soft, and of a dark red colour; and shreds of coagulable lymph adhered closely to their surface. The left renal vein was in the same state as the spermatic, and the substance of the left kidney was soft and vascular. The connection between the constitutional symptoms in this case, and the inflammation of the veins of the uterus, was too obvious to escape detection.

On the 22d July, 1828, I was requested by the late Mr. Baker to deliver Ann Cromer, a patient of the St. James's Infirmary, who was eight months pregnant, and had been attacked with profuse uterine hemorrhage from placental presentation. On the evening of the following day her pulse rose to 140, with headache, heat of skin, and intolerance of light; on that of the 24th, she had a slight rigor, and again on the 25th another exacerbation of fever, the pulse and breathing hurried. For some days subsequently she had less fever, and without evening exacerbations; the pulse ranged from 100 to 120. No pain was felt on pressure of the abdomen, although some mischief was evidently going on. On the 2d of August her breathing had again become much oppressed, with slight cough, and no expectoration. The next day there was pain in the left side of the chest, and sixteen ounces of blood were drawn from the arm. On the 4th the pain was relieved, and on the 5th entirely removed, but the pulse was 120, the skin hot and dry, and there was slight expectoration of a fœtid mucus. On the 6th there was less fever, she was excessively weak, the features were sharp and anxious, and the breath was very offensive. On the 7th the expectoration was more free, thick, and purulent, and although the linen of her bed had been changed, the unpleasant smell was not diminished, and was evidently caused by her breath. Death took place on the 9th, eighteen days after delivery. I examined the body with Mr. Baker, when the following appearances were observed. On opening the chest an extremely fœtid odour issued from its left cavity, in the lower part of which were contained between three and four pounds of a turbid serum, mixed with portions of coagulable lymph. Superiorly the lung was glued to the parietes of the chest by recent loose adhesions; inferiorly the pleura pulmonalis and corresponding pleura costalis were covered with a dense coating of coagulable lymph. In addition to this there was on part of the surface of the inferior lobe of the lung a quantity of the same substance in a loose flaky form, on removing which there presented itself a portion of the lung in a state of complete gangrene; this, about the size of a walnut, forming a black pulpy-looking mass of very fœtid odour, was contained, with some dark-coloured fluid, in a cavity formed by its separation from the sound lung. On making a section of the parts passing through the gangrenous slough, one half of this fell out of the cavity in which it was situated, the other remaining attached to the parietes by a few thread-like adhesions. The cavity itself was lined by a layer of coagulable lymph, having the appearance of a uniform membrane. On cutting into the uterus, which was reduced as much in size as usual at the same period, a few drops of pus flowed from one of the divided sinuses, which, being traced, I found to communicate with an abscess in the left ovarium. I felt the left spermatic vein unusually large and hard before it was laid open, when it was found to contain pus, and its coats were seen thickened, and its inner surface lined with a layer of coagulable lymph which nearly obliterated the cavity. These diseased changes occupied the whole course of the vein to its junction with the emulgent, the coats of which were also thickened, and the cavity lined with lymph. The cava was healthy. There was no trace of inflammation in the peritoneum of the uterus, or general peritoneal sac. The inflamed state of the spermatic vein would here have wholly escaped detection had I not observed the appearances described in the previous case. I felt greatly at a loss to account for the production of so acute and destructive an inflammation of the lungs in an individual who had, previous to delivery, never suffered from any affection of the chest. I was disposed to attribute the attack to the general shock communicated to the system by the operation of turning and hemorrhage, when I accidentally met with the following remark of Laennec, who gave a different explanation of the occurrence. "It is not uncommon to find the veins in the neighbourhood of a cancerous breast filled with pus, either pure or mixed with blood, sometimes fluid, at other times of the degree of consistence of an atheromatous tumour. An additional consequence of the presence of too much pus in the blood is the production of inflammation in different organs, and especially in the lungs, which runs rapidly into suppuration. It is from this circumstance that the subjects of surgical operations, and those labouring under extensive suppurations, are frequently cut off by peripneumonies, which, according to the observations of M. Cruveilhier, are usually lobular, that is, commencing at several points at once. This, in my opinion, is the mode in which we must explain the occurrence of metastasis of pus, at least in the majority of cases. Mr. Arnott, to whom I related these cases, had adopted the same view, and had collected 17 cases of phlebitis, which all went to prove that the suppurations which take place in different viscera after external injuries and surgical operations, do not depend upon any shock communicated to the system, but upon the purulent matter formed in the veins mixing with the blood. Mr. Arnott stated to me, at the same time, that he considered this to be the cause of the suppuration of the eyes, and the painful swellings in the joints, sometimes observed in puerperal women. But there was no pus in the spermatic vein in the first case now related, and I have since seen others where these secondary affections occurred without inflammation of the uterine veins or absorbents where the muscular coat was affected. The connection between inflammation of the uterus and these secondary abscesses is undoubted, but it may be explained in different ways, and I am satisfied that the intimate part of the process requires further investigation. Whatever the *modus operandi* may be, the following cases, which occurred soon afterwards, established a certain connection between inflammation of the uterine veins and fever, inflammation of the lungs and eyes, and painful swellings in the joints and extremities of puerperal women. The relation of these cases, and an examination of the appearances presented by the inflamed veins in the preparations and drawings now upon the table, will give you a better idea of the changes of structure, and the local and constitutional symptoms of uterine phlebitis, than a general description of the disease.

Mrs. Keene, æt. 31, No. 6, Draper's Place, Euston Square, after a protracted labour of three days, was delivered on the 14th July, 1829, by artificial aid, of a still-born hydrocephalic child. Immediately after the expulsion of the child, she was seized with a fit of the most intense shivering, which continued upwards of an hour, notwithstanding the exhibition of the most powerful stimuli, and the exhaustion which followed was alarming. She rallied, however, and passed a quiet night. On the following, and two or three subsequent days, the shivering fits returned at irregular periods, sometimes in a slight form, at others in that of a severe rigor, followed by a flush of heat, and partial or general perspiration. During this time the effects consequent to parturition proceeded as usual. The uterus slightly painful on pressure; lochia natural; bowels open; pulse 133 to 140, and extremely feeble. No complaint of uneasiness, with the exception of a troublesome cough and hoarseness, with which she has been afflicted during the latter months of pregnancy. On the 4th day from the delivery the secretion of milk appeared for a short time, and afterwards receded. From this day to the 10th, the following were the symptoms: pulse rapid; skin universally of a dusky yellow colour, and the heat of the surface increased; respiration hurried; thirst; tongue dry but not furred; great prostration of strength; sallow and haggard countenance; restless and sleepless nights; mental faculties undisturbed. The uterus had gradually subsided, and no pressure, however great, either on it or on the parts in the vicinity, caused pain, except in the right iliac region, where some uneasiness was felt; the flow of lochia natural; bowels regular. At this period the hacking cough which had so long troubled her became more frequent, and it was with difficulty she expectorated the ropy mucus which followed it, and which in the day amounted to an ounce. From the 11th day the respiration became more short and hurried; the pulse more rapid; occasional flushes of heat, thirst, extreme debility, diarrhœa. Pressure over the whole abdomen gave no uneasiness, nor was pain felt in any part of the chest, though auscultation plainly indicated the existence of disease, particularly on the right side. The patient made no complaint but of weakness and the cough. She died, exhausted, on the 12th. Dr. John Prout, who had carefully observed the progress of the symptoms from the period of delivery, was present with me when I opened the body. The uterus being removed from the body for more minute examination, an incision was made into the right superior angle, to which the placenta had been attached, and here its veins were discovered to be empty, and their internal surface of a scarlet colour. On tracing them towards the trunk of the right spermatic vein, they were found to contain a sanious purulent fluid, and were contracted in their diameters, and coated with false membranes. The veins of the right ovarium and fallopian tube were all plugged up with firm coagula. The spermatic itself was lined throughout its whole extent with dense membranes of a reddish, or of an ash-grey colour. Its coats, independent of these membranes, were of extraordinary thickness and firmness—more like those of a large artery than a vein. The whole cavity was contracted; in some parts occupied by a dark-coloured fluid, in others quite obliterated by adhesions formed between the surfaces of the membranous layers deposited within it. At the termination of the spermatic in the vena cava, its orifice was scarcely large enough to admit a crow-quill. Traces of inflammation extended beyond this orifice, the vena cava being partially lined, from two to three inches above it, with an adventitious membrane strongly adherent to its coats, which were at this part double their natural thickness. In its passage upwards the inflammation had extended a short distance into the right emulgent vein, which, near its orifice, was coated with a pellicle of lymph. On opening the thorax a stream of air escaped from the right side; the lungs were collapsed, and upwards of ten pints and a half of red-coloured serum were found in the sac of the pleura. The right inferior lobe was coated with lymph, and a portion of the pleura on the anterior surface was destroyed, and a black gangrenous slough exposed in the substance of the lung. The pulmonary texture around was condensed, and of a deep violet or red colour. The left inferior lobe was also partially coated with a thin layer of lymph; and the pleura, at one point on the anterior surface, was elevated as if by a hard globular substance underneath. When this was laid open, it appeared to consist of a thick yellow-coloured cyst or capsule, containing a soft black matter like a gangrenous eschar. The substance of the lungs around was unusually dense, and of a dark livid colour. The appearances of the portions of lung affected with gangrene, and of the right spermatic vein and vena cava, now described, are well preserved in these preparations of the parts before you.

By looking at this preparation attentively, you will not only be able to form a clear idea of the changes produced upon the uterine veins by inflammation, but of the manner in which the disease originates, and the course it usually pursues, where the placenta has adhered to the superior part of the uterus. The veins in that part of the uterus where the placenta had been attached, and the spermatic, which had conveyed the blood from the placenta back to the system of the mother, are those alone affected, the veins in the lower part of the uterus, and the trunk of the hypogastric, being generally in a perfectly healthy condition. But I will now place before you another preparation, in which the inflammation has run down along the lining membrane of the branches of the hypogastric into the common and external iliac and femoral veins, and upward along the vena cava to the point where the hepatic veins enter, and produced the same alterations of structure that you have seen in the other preparation, viz., injection and condensation of the cellular membrane in which the veins were imbedded, thickening, induration, and contraction of their coats, and the deposition of lymph mixed with pus and coagula of blood within their cavities. Extensive inflammation of the lungs had likewise taken place in this woman, and, what is more rare, destruction of both eyes by violent inflammation. The details of this case I have minutely related in vol. xv. of the Medico-Chirurgical Transactions, and many other cases of uterine phlebitis, in which fatal inflammation of the lungs, eyes, puffy swellings around the joints, ulceration of the articular cartilages and symphysis pubis, and gangrene of different parts of the body, took place in the progress of the disease. In some cases extensive inflammation and suppuration took place in the veins ramifying in the muscular coat of the uterus, and death followed, with many of the symptoms of typhous fever, viz., rapid feeble pulse, delirium, nervous tremors, the tongue and teeth covered with black sordes, vomiting and diarrhœa, before the inflammation had extended beyond the confines of the uterus. By examining the tables of all the cases which have occurred to me during the last fifteen years, you will be fully aware of the frequency and fatality of uterine phlebitis.

In the drawings on the table, you have represented the peculiar beaded appearance of the *uterine absorbents* when filled with pus. The symptoms are the same as in cases of inflammation of the veins of the uterus. The first example of this disease occurred in St. George's Hospital in the month of July, 1829, and is thus described by Mr. Cæsar Hawkins. A woman, æt. 30, in an advanced stage of pregnancy, had sloughing of the skin over a diseased bursa of the patella. The removal of the bursa by an operation was followed by great constitutional disturbance, and labour came on fourteen days after. Uterine inflammation took place on the second day after delivery, and death took place on the fourth. Some puriform lymph was found in the pelvis, but with no increase of vascularity in the peritoneum. In the broad ligaments some fluid was also effused, and on each side numerous large absorbent vessels were discovered passing up, with the spermatic vessels, to the receptaculum chyli, which was unusually distended. All these vessels, and the reservoir itself, were quite filled with fluid pus; but that in the receptacle was filled with lymph, so as to be more solid; the vessels themselves were firmer and thicker than usual. The thoracic duct above this part was quite healthy. The uterus was scarcely contracted, and the internal surface of the lower half was soft and shreddy, and in a state of slough.

A TABULAR VIEW

OF

ONE HUNDRED AND SIXTY CASES OF SEVERE INFLAMMATION OF THE UTERUS AND ITS APPENDAGES,

Which occurred to me in London, from March, 1827, *to the end of April,* 1835.

No.	Name, Residence, and Delivery.	Date of Attack and Symptoms.	Treatment.	Result and Morbid Appearances.
1	Groom; æt. 28; 13, Little Coram Street, Russel Sq. Natural labour. 6th March, 1827.	First day after delivery.—Pyrexia; uterine pain; lochia suppressed; diarrhœa; vomiting: tympanitis. Died on the 10th.	Opiates and hot fomentations at the commencement. V.S. ℥xij. late in the disease, cathartics.	Died. Peritoneal sac extensively inflamed; uterine peritoneum behind coated with lymph; pus in the cellular tissue beneath; uterine appendages on both sides inflamed, and covered with lymph and pus; ℥iv. of a dark-coloured serum in the peritoneal sac; stomach and small intestines distended with gas.
2	Marshall; æt. 23; 3, Crown Street, Soho. Natural labour. 1st March, 1827.	Second day.—A violent rigor; headache; vertigo; uterine pain; tongue red and moist; lochia and milk suppressed; pulse 112, feeble; slight diarrhœa; vomiting; delirium; cessation of pain; enormous distension of abdomen. Died on 16th March.	V.S. ℥xiv. third day after attack, leeches xxx., calomel, pulv. antim., cathartics, opiates.	Died. Extensive peritonitis; intestines glued together with lymph; urerus and its appendages imbedded in lymph and pus: ℥x. of sero-purulent effusion; uterine peritoneum red and vascular; ovaria softened and enlarged.
3	Mary Pascow; æt. 27. Natural labour; 7th child. 15th March, 1827.	Second day.—Severe rigor; acute pain in the back and region of the uterus, increased on pressure; diarrhœa; no sickness; tongue red and moist; pain in the back part of the head, and giddiness; pulse 120, not strong; respiration anxious; face flushed; tremors of the limbs.	V.S. ℥xvj., leeches xxx., calomel, antimony, cathartics.	Recovered.

4	Mary Sullivan; æt. 32; 16, Denmark Street, Soho Sq. In labour 52 hours. 25th March, 1827.	Third day.—Rigors; uterus large and painful; pulse 96, sharp; lochia suppressed. Duration of disease eight days.	V.S. ʒxv., leeches xj., calomel, gr. iv., pulv. antim. gr. v. 4ta q. q. h., cathartics.	
5	Wilson; æt. 42; 4, Pitt Place; Drury Lane. Tedious lab.—2d April, 1827	Eighth day.—Rigors; uterine pain; headache; lochia suppressed.	V.S. ʒxiv., calomel and cathartics.	Recovered.
6	Smith. Natural labour. 6th April, 1827.	First day.—Severe pain in right iliac region; slight pyrexia; rigors; pulse 104; pain aggravated and diffused over the whole uterine region. Symptoms relieved by V.S.	Fomentations, tinct. opii, gtt. xl., a copious bleeding, saline cathartic, calomel, opium, a blister.	Recovered.
7	Williams; 34, Drury Lane. Natural labour. 4th April, 1827.	Sixth day.—Uterus enlarged, and painful on pressure; pyrexia; lochia suppressed.	V.S.	Recovered.
8	Sarah Oulton; 8, Houghton Street, Clare Market. Arm presentation; turning. 9th April, 1827.	Third day.—Acute pain of the uterus, succeeded by great tenderness of the whole abdomen; pulse 110; great heat of skin; lochia suppressed; vomiting; tympanitis.	Stimulants and opiates at the invasion, copious bleeding and digitalis late.	Died.
9	Leeder; æt. 28; 24, Brownlow Street, Long Acre. Natural labour. 13th April, 1827.	Fifth day.—Severe rigor; headache; pain of back, loins, and lower part of abdomen, increased by pressure; pain afterwards in the left iliac fossa and along the course of left iliac and femoral vein, and slight swelling of left inferior extremity.	V. S. lb. ij., leeches xx. calomel, antimony, cathartics.	Recovered.
10	Haman; æt. 25; 2, St. Ann's Place, Soho. Natural labour. 20th April, 1827.	Third day,—Intense headache; no rigor; uterine pain increased by pressure; pulse frequent; tongue white; mammæ flaccid.	V.S. lb. iss., calomel, antimony, diaphoretics, and cathartics.	Recovered.
11	Richards; 20, Stacey Street. Arm presentation; turning. 2d May, 1827.	First day.—Rigors; intense uterine pain and headache; lochia suppressed; pyrexia.	V.S. ʒxxiv., leeches, calomel, opium, cathartics.	Recovered.

No.	Name, Residence, and Delivery.	Date of Attack and Symptoms.	Treatment.	Result and Morbid Appearances.
12	Hunn; æt. 28; Crown Street, Soho.—Natural labour. 1st May, 1827.	Sixth day.—Severe uterine and abdominal pain; pulse 120, feeble; lochia suppressed; milk secreted.	V.S. ʒxx., leeches xxx., cathartics and opiates.	Recovered.
13	Carr; æt. 30; Tash Court, Gray's-Inn Lane. Natural labour. 12th May, 1827.	Third day.—After drinking porter, rigors; uterus large and painful; pulse frequent and soft; tongue white and moist; countenance pale and anxious.	V.S. lb. ij., calomel and cathartics.	Recovered.
14	Maunay; æt. 25; 6, Charles Street, Drury Lane. Natural labour. 27th May, 1827.	Second day.—Uterine pain; nausea and headache; lochia diminished; pulse 80; heat of skin little increased.	V.S. ℥xij., fomentations.	Recovered.
15	Eliza Corey; æt. 16; 50, King Street, Soho. Natural labour. 17th June, 1827.	Third day.—Pyrexia; exquisite uterine pain, with great depression of strength; pulse 140.	V.S. ʒxxiv., leeches xviij., calomel, and cathartics.	Recovered.
16	Groundswell; Ham Yard, Great Windmill Street. 10th July, 1827.	Third day.—Rigors; uterine pain and headache; lochia suppressed.	V.S. ʒxviij., leeches xij., calomel, antimony, cathartics.	Recovered.
17	Shepherd; æt. 33; 39, St. Martin's Street. Puerperal convulsions. 13th August, 1827.	Fifth day.—Rigors; violent pain of uterus; rapid pulse; tongue loaded; followed by severe pains and swelling of left leg.	V.S. twice ʒxxiv., leeches xxiv.	Recovered.
18	Barton.—Natural labour. 2d September, 1827.	—— Acute pain in the region of the uterus; rigors; pyrexia.	V.S ʒxv.	Recovered.
19	Costello: æt. 23; 15, Church Court, St. Martin's. 13th September, 1827.	Fourth day.—Slight uterine pain; rigors; rapid feeble pulse; tongue brown; vomiting; tympanitis; delirium.	V.S., not employed leeches x., stimulants, opiates.	Died.
20	Cantwell; æt. 23; 15, Green Street, Leicester Square. Natural labour. 23d September, 1827.	Second day.—Violent rigor, and uterine pain: pulse 140; headache; sickness; tremors; delirium; great debility; painful and distended abdomen.	V.S. ℥xij., calomel, Dover's powder, cathartics, blisters.	Died.

21	Mrs. Somerville; æt. 40; Orange Street, Leicester Square. Natural labour. 28th September, 1827.	Sept. 21st.—Severe rigor; acute pain in the hypogastrium and loins; suppression of lochia; nausea; urgent thirst; delirium; pulse 130, weak and intermitting; countenance pale and anxious; tongue white and moist. 22d: stupor; pulse more rapid and feeble; pain in the left iliac region. 23d: stupor; hurried breathing; intermitting pulse.	V.S. ℥v., fomentations, opiates.	Peritoneal sac perfectly healthy; no effusion; left spermatic vein from uterus to emulgent vein distended by coagula of blood and lymph, which adhered to the inner surface of the vessel; vein thickened, and inner membrane of a scarlet colour; veins in the fundus uteri inflamed, and muscular coat softened; left ovarium and tube soft, of a dark red colour, and coated with lymph.
22	Foster; æt. 30; 11, Ogle Street, Middlesex Hospital. Natural labour. 6th October, 1827.	Sixth day.—Pain, gradually increasing from delivery; pulse 140; debility; hurried respiration; lochia suppressed; right iliac region peculiarly tender. Convalescent on the third day.	V.S. ℥xvj. (blood buffy), leeches xxiv., calomel, and antimony.	Recovered.
23	Cooper; 6, Moore Street, Seven Dials.—Natural labour. 3d October, 1827.	Tenth day.—Rigor; pain of uterus and right iliac region; pulse 100; lochia suppressed.	V.S. ℥xvj., leeches xxiv., calomel, antimony, and cathartics.	Recovered.
24	Wellington; æt. 22; 16, Tower Street, Seven Dials. Natural labour. 16th October, 1827.	Third day.—Severe pain of uterus from the time of delivery; vomiting; pulse 100; lochia suppressed. Convalescent 19th October.	V.S. ℥ xv., leeches xviij., calomel and antimony.	Recovered.
25	Hill; æt. 35; 454, Strand. Natural labour. 15th October, 1827.	Fourth day.—Severe pain, increased by pressure, in both iliac regions; abdomen soft; tongue white; thirst; pulse 96.	V.S. ℥xiv., calomel, antimony, saline effervescing medicine.	Recovered.
26	Hughes; 22, Short's Gardens. Natural labour. 29th October, 1827.	Second day.—Pain of hypogastrium, increased by pressure, since delivery; rigors; lochia suppressed; tongue loaded; pulse 140, feeble.	V.S. ℥xij., calomel, antimony, cathartics.	Recovered.

No.	Name, Residence, and Delivery	Date of Attack and Symptoms.	Treatment.	Result and Morbid Appearances.
27	Pope; 7, Feathers' Court, Drury Lane. Flooding. 26th October, 1827.	Fifth day.—Rigors; headache; intense uterine pain; lochia suppressed; pulse 135, feeble; tongue dry and brown; vomiting; prostration of strength; delirium; painful induration of the left saphena veins; coma; swellings appeared suddenly in the joints of the arms.	Leeches xxiv., powerful diffusible stimuli, quinine, &c.	Died. Saphena, femoral and iliac veins not examined; small intestines of a bright red; no lymph effused; the left fallopian tube and fundus uteri of a deep red colour: the examination was imperfect.
28	Desmond; æt. 20; 15, Crown Street, Soho. 16th November, 1827.	Fourth day.—Rigors; pyrexia; headache; acute pain of uterus; lochia suppressed.	V.S. ℥xx., leeches xvj., calomel, antimony, Dover's powder, cathartics.	Recovered.
29	Manning; æt. 22; 131, Drury Lane. Arm presentation. 3d December, 1827.	Third day.—Exquisite uterine pain; rigor; thirst; cough; rapid strong pulse.	V.S. (at twice) ℥liv., leeches xxiv., fomentations, calomel, antimony, opium, cathar.	Recovered.
30	Mayes; æt. 20; 5, Vere Street, Clare Market. 7th January, 1828.	Third day.—Rigors; headache; acute pain of hypogastrium; pulse 110; tongue white; lochia and milk not suppressed.	V.S. ℥xvj., leeches xxiv., fomentations, calomel, pulv. Jacobi, cathartics, saline draughts.	Recovered.
31	Adams; æt. 24; 10, Ely Court, Holborn. Natural labour. 10th January, 1828	Third day.—Severe after-pains; uterine region exquisitely painful on pressure; pulse 90, and strong; tongue white; thirst; lochia flow.	V.S. ℥xxx., leeches xviij., cataplasms, calomel, antimony, Dover's pow., cath.	Recovered.
32	Atkinson, æt. 32; 5, Shelton Court. Natural labour. 25th January, 1828.	Second day.—Excessive tenderness of uterus; hypogastrium tumid; pulse 100, weak; no rigor or headache; lochia and milk flow; retention of urine. The symptoms continued several days without relief.	V.S. ℥xviij., V.S. ℥x. leeches xxiv.—xxiv. calomel to salivation, cathartics, cataplasms, blisters.	Recovered.
33	Malton; æt. 30; 5, New Compton Street. Natural labour. 1st February, 1828.	Third day.—Rigors; uterus large, and on the right side exquisitely painful; intense pain in the forehead; tongue white; nausea; prostration; lochia flow.	V.S. xvj. leeches, calomel, antim., cathartics, opiates.	Recovered.

34	Lawrens; æt. 35; 6, Cumberland Street, Middlesex Hospital. Hydrocephalic fœtus; dropsy of amnion. 12th February, 1828.	Second day.—Intense pain of hypogastrium; lochia suppressed; rapid feeble pulse; vomiting; foul tongue; urgent thirst; prostration of strength; tympanitis.	Leeches xxiv., calomel, Dover's powder, effervescing draughts.	Died. Intestines, liver and uterus partially coated with lymph; uterus uncontracted; a fibrous tumour in the muscular coat; lb. ij. of a dark-coloured sero-purulent fluid in peritoneal sac; right uterine appendages disorganized by inflammation; ovarium three times the natural size, and softened.
35	Parkhurst; æt. 34; Marylebone Lane. Hemorrhage and retained placenta.	Third day.—Acute pain of uterus; lochia suppressed; rigors; rapid pulse; loaded tongue; nausea; yellow suffusion of countenance; crural phlebitis on left side.	Copious venesection, leeches, fomentations, cathartics, opiates.	Recovered after five weeks.
36	——; 5, Monmouth Street. Natural labour. 20th March, 1828.	Second day.—Acute pain of hypogastrium; rigors; pulse accelerated; lochia suppressed.	V.S. ℥xviij., calomel, cathartics, fomentations.	Recovered.
37	A patient in the British Lying-in Hospital. Natural labour. 12th March, 1828.	Fifteenth day (first seen).—Violent pain in the lower part of the abdomen; vomiting; rapid feeble pulse; extremities cold.	Opiates, fomentations, leeches xij., vesication, calomel, and opium late.	Died.
38	M. Jenkins; 11, Charles St., Strand. 15th March, ——.	Third day.—Exquisite tenderness, but no fulness nor hardness, in the region of the uterus; headache; rigors; lochia suppressed; pulse quiet, not feeble.	Copious V.S., calomel, antimony, cathartics.	Recovered.
39	——; High Street, St. Giles'. Natural labour. 16th April, 1828.	Fourth day.—Rigor; quick strong pulse; hot skin; great sensibility of the hypogastrium; lochia suppressed.	V.S. ℥xx., calomel, pulv. antim., cataplasms, cathartics.	Recovered.
40	Buck; White Horse Yard, Drury Lane. Natural labour. 8th July, ——.	Second day.—Severe rigor; uterus large, hard and painful; lochia flow; pulse 130; tongue loaded; bowels costive.	V.S. ℥xxv., calomel, cathartics, cataplasms.	Recovered.

No.	Name, Residence, and Delivery.	Date of Attack and Symptoms.	Treatment.	Result and Morbid Appearances.
41	Austin; British Lying-in Hospital. Natural labour. 1st June, 1828.	Seventh day (first seen).—Severe fever, headache, delirium; pulse 130; tremor of tongue and extremities; diarrhœa; pupils dilated; swellings of joints, especially of right wrist; exhaustion.	Leeches xij. to the head, diaphoretics, opi., wine, ammonia, and other stimulants.	Died.
42	Ann Cromer; St. James's Infirmary. Uterine hemorrhage from placental presentation. 22d July, 1828.	Second day.—Rigor; headache; heat of skin; intolerance of light; pulse 140; hurried respiration; no pain of abdomen; pain in the chest, followed in a few days by cough and fœtid expectoration. Died eighteen days after delivery.	V.S. eighth day to ℥xvj., blisters to the thorax.	Died. Abscess in the left ovarium; pus in the sinuses of the uterus on the left side; coats of left spermatic vein thickened, its inner surface lined with lymph and pus, and nearly obliterated. These changes occupied whole course of vein to the emulgent, the coats of which were in the same condition; vena cava healthy; inflammation and gangrene of lungs.
43	——; British Lying-in Hospital. 1828.	Third day.—Acute pain in the iliac regions; rapid pulse; rigors, lochia suppressed.	V.S. ℥xx., calomel, cathartics, foment.	Cured.
44	——; British Lying-in Hospital.—Natural labour. 8th August, 1828.	Sixth day.—Rigors; intense soreness of the hypogastrium; tongue loaded; bowels open; pulse quick; skin hot.	V.S. ℥xx., calomel, pulv. antim., cathartics.	Recovered.
45	Vernon; 11, Chapel Street. Dropsy of amnion; hemorrhage. 1st November, 1828.	Second day.—Violent rigor; sudden attack of acute pain of the uterus, which became large and hard; lochia suppressed.	V.S. ℥xx., leeches, xxvj., calomel, antimony, cathartics, diaphoretics.	Recovered.
46	——; 26, Little Windmill Street.—Natural labour. 3d November, 1828.	Tenth day.—Violent pyrexia; uterus large, hard and painful, gradually increasing from delivery; lochia suppressed.	V.S. ℥xx., leeches xxxvj., calomel, &c.	Recovered.
47	Mrs. Turner; 92, Berwick Street. Premature labour. 10th December, 1828.	Second day.—Acute pain in the hypogastrium before delivery; severe vomiting soon after took place, with pyrexia, tension of abdomen, suppression of urine, and tympanitis.	V.S. ℥xxiv., leeches, cataplasms.	Died. Omentum, intestines, and liver coated with lymph; omentum vascular; peritoneum covering uterus, and appendages, red, vascular, and coated with lymph; two pints of reddish serum in cavity of pelvis; muscular tissue of uterus healthy.

48	Gibbs; 41, Broad Street, Golden Square. Natural labour. 15th January, 1829.	Third day.—Acute pain of uterus; pyrexia; pulse rapid and feeble; lochia suppressed; followed by great tenderness in the left iliac and femoral veins, and general swelling of the whole lower extremity, of short duration.	Moderate bleeding twice at the onset, leeches xxxvj., fomentations, mild cathartics, opiates	Recovered.
49	A Patient of Middlesex Hospital; 20, Ogle Street. Natural labour. February, 1829.	Fourth day.—Pyrexia; acute pain, increased by pressure in the left iliac region; lochia diminished; tongue white; headache; surface hot and moist. Imperfect relief from leeches.	Leeches xxxvj., poultices, mercury, antimony.	Recovered imperfectly after a considerable period.
50	Greenwood; 4, Stafford Street, New Road. Tedious labour. 21st February, 1829.	Third day.—Sudden attack of severe pain in the region of the uterus and left iliac region; intense pain of forehead; violent rigors; pulse 116; lochia diminished; tongue loaded; urgent thirst.	V.S. lb. ij. (syncope), calomel and opium, leeches xxiv., cathartics.	Recovered.
51	Case, British Lying-in Hospital.—Natural labour. 1st March, 1829.	Fifth day.—Pain in the left side of hypogastrium, followed by rigors and headache; pulse 120; skin hot; tongue red and glossy; exquisite tenderness of the whole uterine region.	V.S. ℥xx., calomel, gr. iij., pulv. Dover, gr. v. 3tia q. q. h. The relief from bleeding instantaneous.	Recovered.
52	Davies; æt. 20; deformed pelv.; Orange St. Leicester Sq. A protracted labour, and artificial delivery. 27th March, 1829.	Second day.—Great pain; swelling and tension of hypogastrium; rapid feeble pulse; tongue brown; vomiting; delirium. Died on the seventh day after delivery.	Leeches xxiv., calomel, and Dover's powder.	Died. Large intestines vascular, but not covered with lymph; peritoneum of uterus inflamed; posterior portion of os uteri in a sloughing state; muscular tissue of uterus softened.
53	Mayhew; æt. 33; British Lying-in Hospital. Natural labour. 2d March, 1829.	Fourth day.—Pyrexia; pulse 130; great debility; delirium; dusky yellow complexion; no pain of abdomen; cough; excruciating pains in the joints of the upper and lower extremities. Duration of disease twenty-two days.	Powerful diffusible stimulants, and opiates.	Died. Uterus reduced to its natural size; no morbid appearance in its peritoneal coat; a portion of placenta the size of a nutmeg, in a putrid state, adhering to the uterus, which was soft and black around; sinuses of the uterus full of pus at this part; ℥vj. of pus in right knee-joint; cartilages eroded.

No.	Name, Residence, and Delivery.	Date of Attack and Symptoms.	Treatment.	Result and Morbid Appearances.
54	Case, Queen Charlotte's Lying-in Hospital. Natural labour. 4th March, 1829.	Fourth day.—Slight abdominal pain; diarrhœa; brown tongue; vomiting; rapid feeble pulse; great prostration of strength. Not seen during life; seen after, with Mr. Sweatman. Fourteen days' duration.	V.S. not employed; leeches, vesication, &c.	Died. Omentum small; intestines and uterus strongly adhering together by lymph; uterine appendages much inflamed; several pints of sero-purulent fluid in peritoneal sac.
55	Aldridge; British Lying-in Hospital.—Natural labour. 25th May, 1829.	Third or fourth day.—Severe uterine pain; pyrexia; suppressed lochia. After recovery became maniacal.	V.S. ℥xviij., cathartics, fomentations.	Recovered.
56	Airey; 43, Clipstone Street. Natural labour. 23d May, 1829.	Second day.—Severe uterine pain; no general abdominal tenderness; pulse 100; tongue white; lochia suppressed.	V.S. ℥xvj., calomel, antimony, cathartics.	Recovered.
57	Case after natural labour; Bloomsbury Market. 15th June, 1829.	Fifth day (uot seen at the commencement).—Vomiting within twenty-four hours after delivery; rapid feeble pulse; no pain of abdomen, or swelling; headache and delirium. The history of the early symptoms imperfect.	Head shaved, cold lotions, cathartics.	Died. Left ovarium much inflamed, enlarged, and softened; left fallopian tube red and vascular, and filled with pus; two pints of reddish serum in peritoneal sac; vessels of brain gorged; fluid in the ventricles.
58	M'Sweeney; Falconberg Court, Soho Square.—Natural lab. 6th July, 1829.	Fourth day.—Slight uterine pain; delirium; rapid feeble pulse; great debility; vomiting; yellow skin; offensive lochia.	No remedies employed, the case being hopeless when first seen.	Died.
59	Tiffin; 18, Mercer Street, Long Acre. Natural labour. 7th July, 1829.	Second day.—Uterus large, hard, and exquisitely painful; lochia scanty; pulse 110; pain gradually diffused; sickness; vomiting; delirium; rapid pulse and breathing. Died on the fourth day.	V.S. ℥xv., leeches xij. V.S. ℥xxiv., leeches xviij., calomel, opium, cathartics, blisters.	Died. Intestines distended with air, their peritoneum red and vascular; peritoneum of uterus coated with lymph; in the cellular tissue beneath, a sero-purulent and gelatinous fluid; pus in the lower part of the walls of the uterus, and between the folds of the broad ligaments; right ovarium the size of a hen's egg, and disorganised, left ovarium in a slighter degree; fallopian tubes red, soft, and filled with pus.

60	Stockin; 4, Tottenham Court Road.—Natural labour. 8th July, 1829.	Third day.—Pain in the region of the uterus, increased by pressure; lochia scanty; pulse rapid; saphena veins of right side hard and painful.	V.S. ʒxij., calomel, antimony, &c.	Recovered.
61	Millam; 4, Tudor Place. Natural labour. 12th July, 1829.	Second day.—Rigors and headache, followed by excruciating pain of uterus; pressure cannot be endured; lochia suppressed; pulse 160; tongue white and moist.	V.S. ʒxxiv., leeches xviij., fomentations, calomel and opium, and antimony.	Recovered.
62	Keene; æt. 34. Protracted labour: hydrocephalic child. 14th July, 1829.	Second or third day.—Rigors; slight uterine pain; lochia natural; pulse 133 to 146; sallow dusky skin; respiration hurried; tongue dry; great debility; pain in right iliac region; cough; expectoration; diarrhœa; great dyspnœa.	V.S. not employed; anodynes, diaphoretics, blisters to the chest.	Died. Veins of fundus uteri right side inflamed; right spermatic vein, through its whole extent, thickened greatly, its inner surface lined with a false membrane, and its cavity filled with a sanious purulent fluid; vena cava above and below the entrance of spermatic vein lined with a closely adherent false membrane; right emulgent vein inflamed; two pints of serum in the pleura; portion of right inferior lobe of lung inflamed and in a state of complete gangrene.
63	Mary A. Hale; æt. 25; British Lying-in Hospital. Natural labour. 25th July, 1829.	Second day.—Severe rigor, followed by great tenderness of hypogastrium; rapid pulse; white tongue; whole abdomen became intensely painful, without swelling or tension; cough; dyspnœa, and pain in right side of chest. Died on fifth day after delivery.	V.S. ℥xviij. (syncope), leeches, calomel, Dover's powder, cathartics.	Died. Peritoneum of the uterus and appendages coated with false membrane; peritoneal covering of intestines inflamed and glued together; two pints of whey-coloured fluid in abdominal cavity; muscular coat and vessels of uterus healthy; traces of recent inflammation in the pleura and lungs on the left side.
64	Luff; æt. 26; British Lying-in Hospital. Natural labour. 11th August, 1829.	Sudden acute pain of the uterus; right side exquisitely tender on pressure; uterus large and hard; pulse 112, small; rigors; lochia scanty. The relief from bleeding was most striking in this case.	V.S. ʒxxvj., leeches xxxvj., calomel, gr.vj., pulv. antim. gr. v. 3tia q. q. h., Dover's powder.	Recovered.

No.	Name, Residence, and Delivery.	Date of Attack and Symptoms.	Treatment,	Result and Morbid Appearances.
65	M'Creevey; æt. 25; British Lying-in Hospital. 29th August, 1829.	Second day.—Vomiting during labour; recurred a few hours after delivery, with pyrexia and severe abdominal pain; tympanitis; rapid pulse.	V.S. ℥xiv., leeches xxiv., calomel, opium, &c.	Died. Partial inflammation of small intestines; a turbid fluid in the peritoneal sac; ovaria inflamed and coated with lymph, and also fallopian tubes; the omentum adhering firmly to the posterior part of cervix uteri, formed a thick band, stretching over and firmly compressing the intestines.
66	Case at Chelsea.—Nat. labour. 29th August, 1829.	Fourth day.—Diarrhœa; rapid feeble pulse; yellow tinge of skin; great debility; loaded tongue.	Stimulants.	Died.
67	Clarke; æt. 34; 57, Monmouth Street. Natural labour. 6th September, 1829.	Seventh day.—Pyrexia; headache; vomiting; no uterine pain; pulse 150; swellings around the joints; rigors; delirium; brown tongue; great debility; left forearm swollen, and of a dark red colour; gangrene of the back part of hand.	Stimulants.	Died. Uterus contracted; peritoneum of fundus and back part of uterus of a yellow colour, soft, and easily torn; the muscular and mucous coats at the upper and back parts reduced to a soft pulp of a dark red and ash-grey colour.
68	Mason; æt. 42; 3, Little Vine Street, Piccadilly. Twins. Hemorrhage. August, 1829.	A few days after delivery.—Pyrexia, with great uterine pain; rapid pulse, loaded tongue; diarrhœa; delirium; pulse 140; crural phlebitis in both lower extremities.	Leeches, fomentations, poultices, and diffusible stimulants.	Died. The vena cava, common external and internal iliac veins, and right femoral, inflamed and obstructed. The appearances presented by these veins have been represented in Plate 7, vol. xv. Med. Chir. Trans.
69	——; 7, Denmark Street. Protracted labour; perforation. 14th September, 1829.	Second day. — Pyrexia; acute abdominal pain; swelling of labia; quick pulse; tympanitis; gangrene of internal parts.	V.S. ℥xvj., leeches xxiv., calomel, opium, &c.	Died. Fallopian tubes of a dark red colour, and containing pus; ovaria enlarged and softened, and covered with lymph; ℥xij. of red serum in the abdominal cavity; veins of uterus, where placenta adhered, gorged with pus.

70	Mills; æt. 30; British Lying-in Hospital. Natural labour. 7th October, 1829.	Second day.—Pain and hardness in the superficial veins of both legs and thighs, with a diffuse swelling and erysipelatous redness around, with violent fever; tongue red; face flushed; respiration hurried; jactitation; delirium; suppuration in the cellular membrane around the vein at different points. Duration of disease 14 days.	Fomentations and poultices, stimulants.	Died. Trunks and branches of saphena veins inflamed and obstructed; abscesses beneath the skin in the calf of the leg and interstices of the gastrocnemii muscles; coats of femoral veins thickened and contracted; intestines inflamed, portion of ascending colon in a state of sphacelus.
71	Hickson; British Lying-in Hospital. 14th November, 1829.	Eighteenth day (late in the disease).—Exquisite uterine pain; pulse 130; breathing hurried; features sunk; vomiting; brown tongue; yellow tinge of the skin.	Leeches and stimulants.	Died. Right uterine appendages inflamed; veins at the right side of fundus uteri filled with pus, also the right spermatic vein three inches from the uterus, the inner surface of vessel being coated with lymph; a pint of pus in the cellular membrane at the brim of pelvis; two small abscesses under peritoneum of uterus.
72	Cox; Marylebone Street, St. James's. Protracted labour. 1st December, 1829.	Fifth day.—Pyrexia; acute uterine pain, but chiefly on the right side; vomiting; rigors; lochia suppressed; stupor; delirium; loaded tongue; abdomen puffy; pulse 140, feeble.	V.S. ℥viij., leeches xxiv., calomel, and opium.	Died. Several small abscesses under peritoneum of uterus at left superior angle, and veins in this part filled with pus; ovaria soft and enlarged, and glued with lymph to fallopian tubes, their stroma converted into a dark, red-coloured, pulpy substance.
73	Long; æt. 29, British Lying-in Hospital. Natural labour. 18th December, 1829.	Fourth day.—Headache; pulse 130; delirium; great tympanitis; tongue dry and brown.	V.S. ℥viij., V.S. xij., cathartics.	Died. Abdomen distended; gas in peritoneal sac; the ovaria, tubes, and broad ligaments on both sides, imbedded in lymph and pus; ovaria large, soft, and vascular; the coats of the uterus healthy; omentum, small and great intestines, and surface of liver coated with lymph.

No.	Name, Residence, and Delivery.	Date of Attack and Symptoms.	Treatment.	Result and Morbid Appearances.
74	Gilland; æt. 29; British Lying-in Hospital. 24th December, 1829.	Fifth day.—Pyrexia; rigors, alternating with flushes of heat; pulse 150; headache; giddiness; slight delirium; tremors; face flushed; eyes red; tongue foul; urgent thirst; vomiting; abdomen soft and distended; hypogastrium painful on pressure; tympanitis. Died 9th January.	Leeches x. to the temples, cinchona, wine, brandy, opium, beef tea.	Died. Peritoneal sac perfectly healthy; the right spermatic vein contracted, its coats thickened, and the cellular membrane around it vascular and condensed, its interior lined with false membranes and partially filled with lymph and pus; the veins proceeding from the right ovarium and fallopian tube in the same condition; thin shreds of lymph coated the vena cava around the entrance of the spermatic vein; right ovarium and tube glued together with lymph.
75	Mrs. Allen; æt. 20; 11, Noel Street, Berwick Street. Puerperal convulsions. December, 1829.	Fourth day.—Great uterine tenderness; lochia suppressed; pulse rapid; delirium; vomiting; sallow skin; crural phlebitis. The limb remained stiff and swollen long after.	V.S. ʒxiv., leeches, calomel, antimony, fomentations, anodynes.	Recovered.
76	Phœbe Robbins; æt. 28; Holborn. Tedious labour. 10th January, 1830.	Third day.—Severe after-pains; lochia suppressed; exquisite tenderness of uterus; skin hot; pulse strong and rapid; headache; symptoms very obstinate.	V.S. ʒxvj., calomel, opium, leeches xxiv.	Recovered.
77	Marchant; British Lying-in Hospital. Natural labour. 11th January, 1830.	Third day.—Pain not very severe in the region of the uterus; rigors; pulse 100; headache.	Leeches xij., calomel, cathartics.	Recovered.
78	Leancy; æt. 26; British Lying-in Hospital, Natural labour. 11th January, 1830.	Third day.—Headache; pyrexia; uterine pain; pulse 120; lochia suppressed; vomiting.	V.S. ʒxiv., leeches, xl., calomel, opium, cathartics.	Recovered.
79	Meaden; æt. 20; British Lying-in Hospital. 15th January, 1830.	Second day.—Headache; rigors; uterus painful, large, and hard; anxiety; countenance pale; breathing hurried; pulse 110; lochia scanty. Convalescent in 24 hours.	V.S. ℥xx., leeches xxiv., pulv. ipecac., comp. gr. v. 3tia q. q. hora.	Recovered.

80	Messlin; æt. 22; British Lying-in Hospital. Natural labour. 13th January, 1830.	Second day.—Uterus large, hard, and painful; rigors; headache; lochia nearly suppressed; pulse 100; dyspnœa; cough; skin hot; pulmonic attack; abdomen distended; uterus hard and painful on pressure; vomiting; exhaustion.	V.S. ℥xvj., V.S. ℥xiv., calomel, Dover's powder, &c.	Died. Caput coli and transverse arch of colon covered with patches of lymph; uterus uncontracted, its anterior surface of a uniform dusky red colour; muscular tissue under this reduced to a soft reddish pulp; the veins of the fundus uteri on both sides inflamed, and filled with a quantity of pus; both ovaria enlarged, their structure destroyed: fallopian tubes soft and vascular; lungs gorged with blood, but not inflamed.
81	Case after natural labour; British Lying-in Hospital. 28th Jauuary, 1830.	Third day.—Pyrexia; severe pain of the uterus, increased by pressure. Depletion followed by immediate convalescence.	V.S. ℥xx., calomel, opium, fomentations, and poultices to hypogastrium.	Recovered.
82	Williams; æt. 26; a patient of Dr. Hugh Ley's, Middlesex Hospital. Natural labour. 13th January, 1830.	Eighth day.—Vomiting; rigors; severe uterine pain; foul tongue; offensive lochia; pulse 120, soft.	V.S. ℥xvj., leeches xij., calomel, antimony, and opium.	Recovered. During this month several severe cases occurred among the out-patients of the Middlesex Hospital. In all there was more or less pain in the region of the uterus, increased by pressure, pyrexia, and diminished lochial discharge.
83	Sophia Humphreys. 30th January, 1830.	Third day.—Acute pain of uterus increased by pressure; headache; tongue white; pulse 100; lochia scanty; bowels confined; blood cupped and buffed.	V.S. ℥xij., calomel, cathartics.	Recovered.

No.	Name, Residence, and Delivery.	Date of Attack and Symptoms.	Treatment.	Result and Morbid Appearances.
84	Case in a Mews near Portman Square. Natural labour. January, 1830.	Sixth day.—Continued well for six days after delivery, when a fever of a typhoid character came on, with slight abdominal pain; puffy swelling over the left wrist, and on one of the thighs; slight tympanitis.	Sulphate of quinine and stimulants.	Died. Uterus large; the left spermatic vein through its whole course lined with false membranes, its coats thickened, the lower part filled with pus and lymph; the upper part distended with coagula of blood; the veins at left superior angle of uterus lined with lymph, and filled with a bloody, purulent fluid; the veins on the right side of uterus gorged with pus; the right spermatic vein was healthy, also both hypogastrics.
85	Jones; 48, Marshall Street. Natural labour. 11th February, 1830.	Third day.—Pyrexia; acute uterine pain; lochia suppressed; rigors; pain and swelling of left iliac region; cough; suppuration at the brim of the pelvis; the pus escaped under Poupart's ligament. Recovered after five months.	Leeches often repeated, cataplasms, bark, wine, stimulants; abscess opened artificially.	Recovered.
86	Honeyman; Angel Street, City. Natural labour. 12th February, 1830.	Fourth day.—Acute uterine pain; violent rigor; headache; lochia suppressed; pulse 115, strong; respiration hurried.	V.S. ℥xxx., leeches xxiv., calomel, antimony, cathartics, diaphoretics.	Recovered.
87	Case in the Edgeward Road. 20th February, 1830.	Second day.—Pain in the region of the uterus; rigors; lochia and milk diminished; slight delirium; pulse 115; tongue white; great tenderness in the situation of right uterine appendages.	V S. ℥xj., leeches, calomel, antimony.	—— In the month of April, 1830, three cases occurred, which all yielded speedily to venesection, leeches, calomel, antim., Dover's powders, &c. The details of these cases are not preserved.
88	Mrs. Hadden; æt. 30; 3, Castle Street, Bloomsbury. Arm presentation. ——	Fourth day.—Uterine pain; lochia suppressed; rigors; pain in right groin; pulse 100; tongue white. The pain was not effectually relieved till cathartics were freely administered.	V.S. ʒxij., leeches xvj., calomel, antimony, cataplasms, cathartics.	Recovered.

89	Mrs. Sears; æt. 26; 23, Church Lane. Natural labour. 20th June, 1830.	Fourth day.—Great uterine pain; pulse 100, full; lochia suppressed; rigors; blood cupped and buffed.	V.S. ℥xvj., leeches xxiv., calomel, antimony.	Recovered.
90	Sankey; 35, Wardour Street. Protracted labour. June, 1830.	Soon after delivery, a sudden attack of fever, with sever pain in the right iliac region, and left groin and thigh; rigors; tongue loaded. July 12: the left iliac region is hard, swollen, and painful on pressure, — the hardness extends half way down the thigh, in the course of the femoral vessels; great constitutional disturbance. Aug. 6: a great quantity of pus discharged above Poupart's ligament. A slow but complete recovery.	Leeches, poultices, anodynes.	Recovered.
91	Mrs. Allen; æt. 26; 12, Phœnix Street, St. Giles's. Natural labour. 10th June, 1830.	Fourth day.—Uterine pain; pulse frequent and full; lochia suppressed; tongue brown; vomiting; pain in right groin; pulse 130; respiration hurried.	V.S. xxvj., calomel, antimony, opium, cathartics, saline effervescing draughts.	Recovered.
92	Mrs. Gyde: æt. 22; Brewer Street, Golden Square. Natural labour. 26th June, 1830.	Second day.—Rigors, and pain of the lower part of the abdomen, with pyrexia and suppression of the lochia. 29: pain but slightly relieved; fever continues. July 4th: intense pain of the whole abdomen, and distension; pulse rapid and feeble; constant sickness and vomiting; tongue brown. 6th: symptoms aggravated. Died on the tenth day from attack.	V.S. ℥xij., leeches xij., opium, leeches, a blister, cathartics.	Died. lb. ij. of dark-coloured sero-purulent fluid in peritoneal sac; the whole abdominal viscera inflamed; small intestines, omentum, and uterus, all glued together with lymph; an abscess under the peritoneum of the uterus, near its fundus, on the left side; a small abscess in the body of the uterus on the left side; uterine appendages on both sides vascular, and coated with lymph.
93	Phillips; æt. 32; 2, Sussex Street. 30th July, 1830.	Fifth day.—Great uterine pain; pulse 130; violent headache; exquisite tenderness, increased by pressure, in the left side of the uterus, which gradually diminished, and the pulse became less frequent. A slow recovery.	V.S. ℥x., leeches xij., calomel, antimony, opium, cathartics.	Recovered.

No.	Name, Residence, and Delivery.	Date of Attack and Symptoms.	Treatment.	Result and Morbid Appearances.
94	Mrs. Chapman; æt. 36; 9, Belton Street, Long Acre. Natural labour. 19th August, 1830.	Fifth day.—After drinking cold beer, seized with sudden uterine pain; rigors; headache; delirium; pulse 120, weak; tongue dry and brown; constant vomiting and diarrhœa; great debility; coma; hurried respiration. Duration of disease, nine days.	Leeches xij. to the temples, calomel, opium, pulv. cretæ comp. c. opio, fomentations, &c.	Died. Ovaria red, soft, and enlarged; left tube filled with pus; muscular coat of the uterus at the fundus where the placenta had adhered, so soft that the fingers passed through it in removing the parts; no inflammation of peritoneum or effusion into the abdominal cavity.
95	Keene; æt. 34; 2, Little Earl Street. Tedious labour. 2d September, 1830.	Third day.—Uterus large, hard, and painful, especially on the left side; headache; slight rigor; pulse 132; lochia continue.	V.S. ℥xvj., leeches xij., calomel, antimony, opium, cathartics, pulv. ipecac. co.	Recovered.
96	——; æt. 30; Stewart's Rents, Long Acre. 5th October, 1830.	Third day;—Great uterine pain, increased by pressure; dyspnœa, and pain in right side of thorax; distension of abdomen. Duration of disease, five days. Dying when first seen.	V.S., copious leeches, fomentations, &c.	Died. Pleura and substance of lungs on right side inflamed; the left inferior lobe coated with lymph; two quarts of serum in the peritoneal sac; small intestines covered with lymph; uterus imbedded in lymph; uterine appendages inflamed; veins of uterus healthy.
97	Mrs. Wall; æt. 32- Protracted labour from distortion of pelvis. 1st November, 1830.	Attacked the day after delivery.—Acute uterine pain; uterus large and hard, lochia suppressed; pulse 100, soft; pain in left groin; pulse rapid; countenance dejected; great debility.	V.S. lb. ss., leeches xx., calomel, antim., opium, cathartics.	Died. Two pints of a dark-coloured serum in the peritoneal sac; uterine peritoneum inflamed; both ovaria soft, red, and large, and when cut into seemed filled with a purulent gelatinous fluid; the absorbents of the uterus on the left side filled with pus; veins and muscular coat healthy.
98	Sexton; æt. 30; British Lying-in Hospital. Hemorrhage. 19th December, 1830.	Third day.—Great uterine pain; lochia suppressed; headache; rigor; countenance dusky; pulse rapid and feeble; distressing flatulence; tympanitis.	V.S. ℥xix., leeches xxxvj., calomel, antimony, opium, cathartics, &c.	Died.

99	Jones; æt. 24; British Lying-in Hospital. Natural labour. 20th December, 1830.	Second day.—Intense pain of uterus and both groins; lochia suppressed; rigors; headache; vomiting; features collapsed; abdomen swollen; hurried respiration; pulse 120. Duration of disease, three days.	V.S. ℥xij., leeches xxxvj., calomel, &c.	Died. The placenta had been attached to the left side of the fundus uteri; the veins here were lined with lymph and gorged with pus; the absorbents on the left side distended with pus; both ovaria large, and so soft that they were broken down by a small stream of water falling upon them; tubes inflamed; ʒiv. of serum in peritoneal sac, and patches of lymph over the small intestines.
100	Cecilia Boyd; æt. 31; 32, Peter Street. Natural labour. 28th December, 1830.	Fourth day.—A rigor; great pain in the region of the uterus; slight delirium; pulse 120, from the time of delivery; countenance pale; abdomen tumid; hypogastrium and iliac fossæ painful on pressure; constant dozing; tongue dry and brown; vomiting; flatulence; distension of abdomen; pulse rapid and feeble, and irregular.	V.S. ʒxij. (followed by syncope), leeches xxvj., calomel, opium, antimony, poultices, mercurial friction.	Died. Abdomen distended with gas; ℥vj. of red serous fluid in its cavity; peritoneum healthy throughout, except that portion covering the posterior surface of the uterus and its appendages; pus in cellular membrane under peritoneum of uterus behind; both spermatic veins contained pus in considerable quantities, as did also the venous branches at the angles and inferior portion of the uterus; the fallopian tubes vascular; the muscular coat of uterus healthy; no appearance of pus in the orifices of the veins at that part to which the placenta had been attached.
101	——; æt. 22; Northumberland Street, New Road. Natural labour, 7th February, 1841.	Third day.—Violent pain and enlargement of uterus; no rigor; pulse 140, feeble; incessant vomiting; tympanitis; delirium; lochia not suppressed.	V.S. ℥xvj., leeches liv., blisters, mercurial friction, calomel, antimony, opiates.	Died.

No.	Name, Residence, and Delivery.	Date of Attack and Symptoms.	Treatment.	Result and Morbid Appearances.
102	Holding; 4, Marshall Street, Golden Square. Natural labour. 18th January, 1831.	Third day.—Severe uterine pain; rigors and headache; lochia suppressed; pulse 130; features pallid; enlarged painful veins at the top of left thigh; great debility; vomiting; pain ceased.	V.S. ℥xvj., leeches xlviij. thrice, calomel, cathartics, stimulants, &c.	Died. Intestines distended with air, their peritoneum healthy; peritoneal coat of the posterior part of the uterus coated with lymph; both ovaria large and soft, the right covered with lymph; the muscular coat of the uterus, at the superior and anterior part where the placenta had adhered, of a yellow colour, and easily torn; the veins at the neck of the uterus on the left side filled with pus; the absorbents at the left superior angle of the uterus, and between the broad ligaments filled with pus.
103	——; Compton Place. Natural labour. 22d February, 1831.	Fifth day.—Slight uterine pain; headache; pain and swelling of groin; lochia suppressed; delirium; tremors; pale and sunken countenance. March 2d: iliac fossæ painful and swollen; no pain in umbilical and epigastric regions; nervous tremors.	V.S. ℥xvj. leeches, cataplasms, stimulants. Dying when first seen.	Died.
104	Mrs. Crampton; 75 Gray's Inn Lane. Natural labour. 16th May, 1831.	Fifth day.—Acute uterine pain; severe pyrexia. On the 12th day hectic fever; a large abscess pointing at the groin, from which a quantity of pus was discharged.	Leeches xxiv. three or four times, poultices, cathartics, opiates.	Recovered.
105	Mrs. Baird; æt. 30; Meard Street.—Natural labour. May, 1831.	Third day.—Pain in the region of the uterus, increased by pressure; suppression of lochia.	V.S. ℥xviij., calomel, Dover's powder, &c.	Recovered.
106	Mr. Morley's case; Queen Street, Seven Dials. 24th July, 1831.	Second day.—Rigors; tenderness of the hypogastrium; suppression of the lochia; rapid feeble pulse. July 31st: slight distension of abdomen; delirium; sickness; vomiting.	V.S. ℥xij., leeches, calomel, antimony, cathartics.	Died. Double uterus; extensive peritonitis, with sero-purulent effusion; uterine appendages imbedded in thick masses of lymph; veins of cervix uteri on left side full of pus.

107	A Lady; æt. 26; Great Prescott Street. Placenta retained six hours. 19th June, 1831.	In a few days great tenderness of the uterus and fever, with great prostration of strength. At the end of three weeks pain and tension along the brim of the pelvis, and a colourless swelling of the whole left inferior extremity. July 21st: pulse 150; nausea, vomiting, diarrhœa; tongue brown; dusky hue of skin; cough, dyspnœa, and expectoration. Died 24th July.	Leeches, fomentations.	Died. Uterus greatly reduced in size; recent adhesions between the uterus and rectum, and a quantity of pus; peritoneal and muscular coats of fundus and body soft, and of an inky-black colour; branches and trunk of left hypogastric vein full of pus, and lined with dark-coloured false membranes; the coats of common external, iliac, and femoral veins thickened and filled with lymph and pus; the vena cava in the same state.
108	Williams; 1, Kennedy Court, Crown Street. Hemorrhage and retained placenta. 29th July, 1831.	Second day.—Pain in the hypogastrium; rapid feeble pulse; suppressed lochia; no relief after the first leeches; great uterine tenderness; ptyalism, followed by a remission of all the symptoms.	Leeches xviij. twice, calomel and opium, and cathartics.	Recovered.
109	Porter; 21, High Street, Long Acre. Instrumental labour. August 7, 1831.	First day.—Great tenderness of abdomen; pyrexia; lochia scanty; abdomen tympanitic. Continued conscious till death.	V.S. twice during labour, and twice after delivery, leeches, &c.	Died. Extensive peritonitis; inflammation of the peritoneum, covering the uterus and intestines, and softening of posterior part of uterus; uterine appendages inflamed; great effusion into the abdominal cavity.
110	Case in the St. Marylebone Infirmary. October, 1831.	Acute pain in the region of the uterus; rapid feeble pulse; vomiting and tympanitis.		Died. Inflammation of uterine peritoneum, ovaria and tubes; extensive effusion into the peritoneum.
111	Bentley; British Lying-in Hospital. Natural labour. December, 1831.	Intense soreness of the region of the uterus, aggravated by pressure; lochia suppressed; pulse 120; rigors; severe headache; thirst; pain extending to umbilical region.	V.S. ℥xx., leeches xxiv., calomel, opium, cathartics, Dover's powder.	Recovered.
112	Howard; Titchfield Street. December, 1831.	Constant pain in uterus, increased by pressure; lochia suppressed; pulse natural; rigors; violent headache.	V.S. ℥xviij. calomel and opium.	Recovered.

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113	Wood; St. James's Infirmary. Natural labour. 19th December, 1831.	Second day.—Pain in right side of hypogastrium; chills, not rigors; lochia scanty; tenderness increased; pulse 135; vomiting.	V.S. ℥xviij., leeches xij., calomel and opium, V.S. ℥xij., leeches xij., V.S. xviij.	Recovered.
114	A Lady, æt. 26; Conduit Street. Natural labour. 6th January, 1832.	Severe irritation of the bowels from a cathartic before labour; 16 hours after delivery; diarrhœa, with severe pain, increased by pressure, over the whole of the hypogastrium; pulse 100; no rigor. This might have been considered a case of intestinal irritation, but the symptoms did not subside till leeches had been applied, and calomel and opium given.	Leeches, calomel, Dover's powder, a blister.	Recovered.
115	A Lady; æt. 25; South Street, Manchester Square. Protracted labour. 9th January, 1832.	Twenty-four hours after delivery had a severe rigor, followed by tenderness of the uterus increased by pressure; uterus large and hard; lochia scanty; tongue furred, dry, brown; delirium; hurried respiration; pulse 160, soft and feeble; vomiting. Jan. 12th: great pain in the left side of the hypogastrium; tympanitis; vomiting; delirium; diarrhœa. 13th: pulse 145; tympanitis and other bad symptoms subsided, but she had nearly died afterwards from paralysis.	V.S. ℥xxiv., a great number of leeches, and large quantities of calomel and opium, clysters, blisters, saline draughts.	Recovered.
116	Case; British Lying-in Hospital. 9th January, 1832.	Second day.—Pain in the region of the uterus; pulse 130; seemed to recover after the bleeding, and subsequently died with symptoms of inflammation of the deep structures of the uterus.	V.S. ℥x. (blood not buffed), calomel, extr. of colocynth, mistura salina c. camph. et ammonia, emplast.	Died.
117	Case; British Lying-in Hospital. 9th January, 1832.	Thirty hours.—Rigors; slight tenderness in the region of the uterus, increased by pressure; with quick pulse, loaded tongue, and suppressed lochia and milk.	V.S. not employed. Anodynes, stimulants.	Recovered.

18	——; æt. 26; 12, Chapel Place, Crown Street. Distorted pelvis. 19th January, 1832.	First day.—Rigor of great severity, followed by pain in the region of the uterus; suppression of lochia; pulse 130; great heat of surface; tongue white; urgent thirst; no nausea. Jan. 22d: a large swelling in the situation of the right parotid, with erysipelas of the face, and suppuration.	V.S. (blood not buffed), leeches, calomel, opium, cathartics, ol. ricini.	Recovered.
119	Wildman; æt. 30; British Lying-in Hospital. Natural labour. 27th January, 1832.	Obscure febrile symptoms a few days after delivery; no pain in region of uterus. Tenth day after delivery incoherent; a severe rigor; pulse 130; tongue dark glossy red; countenance yellow; left lower extremity. Feb 13th: conjunctiva of both eyes intensely red and swollen; right knee-joint painful; gangrene over the sacrum. 14th: eyes enormously swollen; pain in right knee, elbow-joints and wrists. Died on the 18th: sight lost before death.	Leeches, calomel, opium, stimulants, and anodynes, fomentations, &c.	Died. Uterus contracted; abscess in muscular coat of uterus; coats of the left common external iliac and femoral veins deep and superficial, thickened, and their cavities filled with coagula; lower part of vena cava coated with lymph; the uterine, vaginal, gluteal, and other branches of the internal iliac, gorged with pus, and lined with false membranes; uterine branches of right internal iliac also affected.
120	Case; British Lying-in Hospital. Natural labour. 30th January, 1832.	Feb. 1st.—After a rigor, seized in the night with constant severe pain in the hypogastrium; lochia and milk suppressed; pulse 120; exquisite tenderness; tongue white; urgent thirst; nausea; pain across the forehead; no pain in abdomen, except in the uterus. 4th: convalescent. After leaving the hospital had another severe attack, which yielded immediately to bloodletting.	V.S. ℥xvj. (blood buffed), leeches xxiv., calomel, opium, saline draughts, cathartics. Took 50 grains of calomel. Poultices, &c.	Recovered.
121	Tellbury; British Lying-in Hospital. Natural labour. 4th February, 1832.	Second day.—Acute pain in uterus; lochia suppressed; rigors; headache; tongue white on the edges, dry in the middle; pulse 140, feeble; face flushed, respiration hurried; occasional cough; great diarrhœa followed the calomel.	V.S. ℥xviij. followed by immediate relief), leeches twice, calomel, opium, saline effervescing draughts, cathartics.	Recovered.

No.	Name, Residence, and Delivery.	Date of Attack and Symptoms.	Treatment.	Result and Morbid Appearances.
122	Otley; æt. 32; British Lying-in Hospital. Natural labour. 7th February, 1832.	Second day.—Rigor; pain in the hypogastrium; suppression of lochia; pulse 140; skin warm; headache. Feb. 10th: pain on pressure in the right side of uterus; pulse frequent; abdomen soft and puffy; tongue loaded.	V.S. ℥xiv. (blood buffed), leeches xxiv., calomel, opium, ol. ricini.	Recovered.
123	Norris; æt. 30; British Lying-in Hospital. Natural labour. 18th February, 1832.	Second day.—Severe rigor; pain in the region of the uterus; pulse 120, full; skin hot; lochia suppressed; headache; tongue furred. 21st: tenderness in the region of the uterus; frequent cough.	V.S. ℥xx. (blood neither cupped nor buffed), 40 grains of calomel taken with opium, leeches xij.	Recovered.
124	Little; æt. 28; British Lying-in Hospital. Natural labour. 23d February, 1832.	First day.—Rigor; pain of hypogastrium, increased by pressure; pulse 100; headache; tongue white. Twenty-fifth day: pain immediately relieved by the bleeding. Twenty-seventh day: slight return of pain.	V.S. ℥xx. (blood buffed), leeches xviij., calomel, opium, leeches.	Recovered.
125	A Lady; æt. 26; Charlotte Street, Bloomsbury. Natural labour. 24th February, 1832.	Third day.—Slight rigors; diffused pain, increased by pressure, over the abdomen, and especially on the sides of the hypogastrium; headache; pulse 100; lochia and milk diminished. One of the mildest cases contained in this table.	Leeches xviij., calomel, and opium.	Recovered.
126	Case; British Lying-in Hospital. After hemorrhage and retained placenta. 28th February, 1832.	First day.—Rigors; exquisite tenderness in the region of the utèrus; headache; pulse 100, feeble; tongue white; nausea and thirst. March 1st: pulse 110; pain diminished. 2d: gone, and convalescent.	V.S. ℥viij. (blood not buffed), calomel, antimony, opium, leeches xxiv.	Recovered.
127	Walter; æt. 29; British Lying-in Hospital. Twins. 20th February, 1832.	Second day.—Low and depressed ever since delivery; pulse 120; irregular shiverings, countenance haggard. Has not complained of much pain in the abdomen; no vomiting. The symptoms were apparently produced by mere debility, without any local affection. Died fourteen days after delivery. The symptoms were very obscure.	Neither bloodletting, general or local, or any other remedies were employed.	Died. The whole of the peritoneal coat of the intestines, liver, and uterus, thickly covered with lymph, and a considerable effusion of sero-purulent fluid; the uterine appendages much inflamed; muscular coat and veins healthy.

128	Case at Teddington. After natural labour. End of February, 1832.	Second or third day.—Rigors; uterine pain; accelerated pulse, and other symptoms, which immediately yielded to copious bleeding, &c. A case occurred the following day, and with the same result.	Copious V.S., calomel, opium, and oil of turpentine.	Recovered.
129	Gates; æt. 22; British Lying-in Hospital. Natural labour. 2d March, 1832.	First day.—Rigors; quick pulse; tenderness, increased by pressure, in the region of the uterus. March 4th: incoherence; great pain of uterus continues; tongue brown; urgent thirst; no sickness; pulse 120; countenance sallow.	Leeches xviij., calomel, opium, leeches, cathartics.	Recovered.
130	Case; British Lying-in Hospital. After natural labour. 15th March, 1832.	Second day.—Rigors; pain in the region of the uterus; diminished lochia; quick pulse; loaded tongue. March 18th: relieved by the bleeding.	V.S. ℥xij. (blood buffed), large doses of calomel and opium.	Recovered.
131	A Lady; æt. 28. Uterine hemorrhage. 27th March, 1832.	On the second day, great quickness of pulse; and on the third, pain, increased by pressure, in the region of the uterus, especially on the left side; lochia diminished; no milk; slight incoherence. In a few days there was great febrile excitement; pulse 130; delirium. Tenderness of the left groin followed, and crural phlebitis on the left side.	Leeches, calomel, opium, sedatives, quinine, wine.	Recovered.
132	Case; Lying-in Ward of St. Marylebone Infirmary. 1st April, 1832.	Pain in the right side of the hypogastrium, increased by pressure; rapid pulse; suppression of lochia and milk; great delirium. Duration of disease nine days.	Leeches, &c.	Died.
133	Mrs. Gray; æt. 30; British Lying-in Hospital. Natural labour. 18th April, 1832.	Slight rigor; tenderness on pressure in the region of the uterus; tongue white; thirst; bowels open. Twenty-first day: pain gone; pulse rapid; milk secreted. Twenty-seventh day: has continued entirely free from pain; great debility; pulse 120; delirious; tympanitis.	Leeches xij., calomel, and opium.	Died.

No.	Name, Residence, and Delivery.	Date of Attack and Symptoms.	Treatment.	Result and Morbid Appearances.
134	Sweatman; æt. 30; British Lying in Hospital. Natural labour. 14th April, 1832.	Third day.—Pain in the back. Fourth day: rigor; great tenderness in the uterine region; pulse 120; tongue red and dry in the centre, white and moist on the edge; thirst; cough; lochia scanty; uterus felt large and hard. Nineteenth day: pain relieved; pulse 110; mouth sore from mercury. Twenty-second day; vomiting; delirium; rapid pulse; great swelling in the situation of the parotids; no swelling, pain, or tension of abdomen; conscious till she sank.	V.S. ʒxiv., calomel, opium, leeches xij.	Died. Omentum, liver, uterus, intestines, all matted together with lymph; a little serum in the peritoneal sac; right ovarium and tube inflamed severely; all the veins passing into the right spermatic vein filled with pus; a great part of the veins in the walls of the uterus filled with purulent fluid.
135	Case; St. Marylebone Infirmary. 16th April, 1832.	Second day.—Rigors; acute pain in the region of the uterus; quick pulse and other characteristics; immediate relief followed the bleeding.	V.S., ℥xiv. (blood not buffed), leeches, calomel, opium, poultices.	Recovered.
136	Case with Mr. Prout; Titchfield Street. Natural labour. 17th April, 1832.	Second day.—Rigors; pain in the back and left side of the uterus; intense headache; retching; diarrhœa. A tedious recovery after several weeks.	Opium and cathartics.	Recovered.
137	Three cases; British Lying-in Hospital. Between May 12th and 28th, 1832.	They had all the characteristic symptoms of peritonitis within three days after delivery; rigors; uterine pain; quick pulse.—In the early part of June a fatal case occurred in the St. James's Infirmary, another in the St. Marylebone Infirmary, and a third in the British Lying-in Hospital.	Copious bleedings, calomel, opium, and cathartics, the only remedies.	Recovered.
138	Mrs. Foster; æt. 30; British Lying-in Hospital. 25th June, 1832.	Second day.—Pain in the region of the uterus; no rigor; lochia not suppressed; uterus large and hard: pulse 110; tongue white and dry; pain relieved by the leeches, but returned and extended; nausea; vomiting; swelling of abdomen; delirium.	Leeches xviij. twice, calomel, opium, saline effervescing draughts.	Died.
139	Case; Kilburn. Natural labour. July, 1832.	Third day.—Rigor; slight pain in the left side of the uterus; rapid pulse; furred tongue; great cerebral excitement. July 23d: pulse 120, not feeble; milk and lochia both continue; face flushed; slight delirium; diarrhœa; no sickness or vomiting.	Leeches xxij. starch and laudanum, clysters, head shaved, cold lotions, blister to the hypogastrium.	Recovered.

140	A Lady in New Bond Street. Natural labour. 12th July, 1823.	Seen in consultation.—The day after slight pain in the region of the uterus; rigors; quick pulse. Sixteenth day: pain in the left groin and swelling of the left leg and thigh. Eighteenth day: dyspnœa; cough; rapid feeble pulse. Twenty-first day: stupor; face flushed; pupils dilated; pulse 120; tongue covered with aphthæ; left shoulder painful, and a large red patch over it; diarrhœa.	Digitalis, diuretics.	Died.
141	Case in a public institution. Distorted pelvis, forceps, and perforation. September, 1832.	Did not see the patient for several days after delivery; then vomiting; slight uterine tenderness, and great debility; rapid pulse. Died on the sixth day.	No treatment adopted at the onset of the disease.	Died. The mucous and muscular coat of the orifice, cervix, and lower part of body of uterus, softened and of a dark colour, broken down, and disorganized; the orifice lacerated in two parts.
142	Case; Leicester Square. Natural labour. 24th June, 1832.	Third day.—Slight tenderness along the brim of the pelvis, on the left side; great depression of spirits; pulse little affected. July 1st: pain in the calf of the left leg, followed by swelling, and tenderness along the course of the iliac and femoral vessels of the same side.		
143	Case; St. James's Infirmary. Retained placenta. 6th November, 1832.	Eighth day.—Pulse rapid and feeble; dyspnœa; slight pain in the left side of the chest; no pain in the uterine region; sank soon, with diarrhœa and urgent dyspnœa. Died 15th of November.	Leeches to the hypogastrium, a large blister to the chest, &c.	Died. No effusion into the peritoneal sac; uterus had contracted and sunk down into the pelvis; near the right round ligament there was an adhesion between the uterus and bladder; an abscess here under the peritoneum of the uterus; ovaria enlarged, red, and soft; at the neck of the uterus the veins full of pus, and the cellular membrane around inflamed; extensive pneumonia on the left side

No.	Name, Residence, and Delivery.	Date of Attack and Symptoms.	Treatment.	Result and Morbid Appearances.
144	Case at Paddington. After natural labour. 24th September, 1832.	Third day.—Acute pain on each side of the uterus, with rapid and feeble pulse; loaded tongue; dusky countenance; lochia not suppressed. Twenty-eighth day: pain relieved by bleeding, but the pulse became more rapid, and she gradually sank; tympanitis before death.	V.S twice, calomel, opium, and saline medicines.	Died. Both ovaria greatly enlarged, softened, and their structure completely disorganized; the fallopian tubes red and inflamed; peritoneal sac healthy: ℥iv. of red serum effused.
145	Case; British Lying-in Hospital. 3d November, 1832.	Did not see the onset of the disease.—Sickness and acute pain in the region of the uterus; rapid feeble pulse; vomiting. Soon sank.	V.S. not employed. Leeches, calomel, and opium.	Died. Uterus large, soft, and uncontracted; uterine appendages on both sides of a dark livid colour; ovaria pulpy; coats of the upper part of the uterus in a soft, shreddy state, torn by the slightest touch; a portion of the uterus behind retained the healthy structure.
146	Mary Gane; near St. Thomas's Hospital. Natural labour. 21st October, 1832.	Third day.—Pain and stiffness about the hopogastrium, and inguinal regions, extending down the thighs, with pyrexia and headache; rigors; pulse frequent; offensive lochia. Thirteenth day: severe rigors; pain in the symphysis pubis and right groin; thigh swollen, and femoral vein painful; the left limb became affected; diarrhœa; gangrene over the sacrum, and over the right ankle.	V.S. at the commencement, leeches and cupping-glasses, fomentations, calomel, and Dover's powder.	Died. Symphysis pubis separated to the distance of an inch and a half, and its cartilages gone; pus had escaped from it into the pelvis; right femoral vein plugged up with fibrin, and the saphena major filled with pus; vena cava inflamed to a great extent; peritoneum of uterus inflamed.
147	Case; Paddington. Twins; retained placenta; flooding. October, 1833.	Six weeks after delivery.—Complained of dyspnœa and pain in the right side of the chest; no rigor. Four days before death, extreme prostration of strength; irregular hectic fever; fœtid expectoration; lungs previously healthy.		Died. Pleuritis and hepatization of the lungs on both sides; uterus greatly reduced in size: the ovaria and tubes healthy; the left spermatic vein healthy, but the right, from the uterus to its termination in the vena cava, was greatly enlarged, and the coats thickened, and the cavity filled with a layer of lymph and clot of blood of a vermilion tint.

148	Case; St. Marylebone Infirmary.—16th Jan. 1834.	Tenth day.—Great tenderness confined to region of uterus; pulse feeble; lochia scanty, very offensive.	Leeches, calomel, antimony, opium, cath.	Recovered.
149	Case seen with Mr. Gosna; St. Martin's Parochial Infirmary. After natural labour. November, 1833.	Cough; dyspnœa and pain in the chest a week or ten days after delivery; and also tenderness in the region of the uterus; the symptoms of pulmonary disease gradually became worse, and she died five or six weeks after her confinement.	Blisters to the chest, and other remedies to relieve the disease of the lungs.	Died. Extensive inflammation and hepatization of the lungs on both sides; the uterus within the pelvis, and reduced to the usual size a month after delivery; the left fallopian tube adhering to the uterus low down behind; the veins of the cervix and body of the uterus filled with pus on the left side; all the branches of the internal iliac and common iliac inflamed, and lower part of vena cava; pus in pulmonary veins.
150	Case seen with Dr. Fergus; St. George's Parochial Infirmary. After tedious labour. 2d July, 1834.	Did not see the patient during life; was informed that she had no pain in the region of the uterus; no rigor nor quickness of pulse; but that there was great debility, low muttering delirium; that the skin had a peculiar dark hue; and that the lochia were offensive.		Died. Brain perfectly healthy; red serum effused into the sacs of the pleuræ; one of the lobes of the lungs hepatised; veins of the fundus uteri on left side filled with pus; veins of cervix in the same condition; many absorbents on this side full of pus.
151	Case; St. James's Infirmary. After twins, and hemorrhage. 23d July, 1834.	Fifth day.—Intense headache; countenance pallid; slight convulsive twitches of the head and extremities; pulse 140, small; acute pain of uterus for a short time. July 29th: sinking; tremors; mucous rale; abdomen swollen; hypogastrium painful.	V.S. copious, and leeching, stimulants and cordials.	Died. Peritoneum of posterior part of uterus, broad ligaments, and peritoneum of intestines and liver, coated with lymph; lb. iij. of sero-purulent fluid effused; ovaria large and soft, and tubes filled with pus; absorbents on left side of uterus full of pus.
152	Case of an idiot; St. George's Infirmary. 24th July, 1834.	Dr. Fergus stated that the symptoms were— rapid feeble pulse; vomiting and diarrhœa; no uterine pain; purulent discharge from the vagina; the perineum and also os uteri torn during the labour. Death took place about a week after delivery. Present at the inspection of the body.	Anodynes, wine and other stimulants.	Died. Examined the body with Dr. Fergus—slight peritonitis; veins of the cervix and fundus uteri gorged with pus; inflammation of veins appear to have commenced near the part where os uteri was lacerated.

No.	Name, Residence, and Delivery.	Date of Attack and Symptoms.	Treatment.	Result and Morbid Appearances.
153	Case of twins; British Lying-in Hospital. 21st November, 1834.	Fever from the time of delivery. Fifteen days after: conjunctiva of right eye became red and swollen, and the eyeball enlarged. Twenty-first day: eye destroyed; left eye similarly affected; excruciating pain in the left elbow and shoulder-joint; tongue brown; no delirium; pulse 150; no tenderness in the region of the uterus; slight fulness along the brim of the pelvis, left side; cough, with dyspnœa; expectoration; sickness.		Died. The whole left spermatic vein inflamed, and filled with pus; pus flowed copiously from the orifice of the veins in the lining membrane of the uterus, where the placenta had adhered; when cut open, this part of the uterus was like a sponge soaked in pus.
154	A young woman; 71, Clarendon Street, Portland Town. Natural labour. 3d December, 1834.	Saw this patient first two days before death.—Pulse rapid; rigors; cold extremities; left lower extremities swollen, not discoloured; foot and leg pit on pressure; veins around the knee swollen; great tenderness in the course of crural vein; delirium; offensive lochia; general abdominal tenderness; sloughs over sacrum.	Anodynes, stimulants, wine.	Died; body not allowed to be examined.
155	Case with the late Mr. Powell; 66, Grove Street, Camden Town. 8th December, 1834.	Usual symptoms of uterine inflam. a few days after delivery; in two months, when I first saw patient, crural phlebitis in left lower extremity, and constitutional symptoms declining. Right inferior extremity had previously been severely affected.	Leeches, fomentations, calomel, and opium.	Recovered.
156	Case; Saffron Hill. After natural labour. January, 1835.	A female attended in labour by a surgeon, who was at the time obliged, twice or thrice a day to dress the leg of a gentleman affected with phlegmon. erysipelas; soon after delivery this woman was attacked.	V.S. ℥xx.	Died. Extensive peritonitis and inflammation of the veins of the uterus.
157	Mrs. ——; Poland Street. 10th January, 1835.	In 30 hours after the birth of a putrid child, attacked with the most violent symptoms; headache; stupor; sickness of stomach; severe pain in the lower part of the spine, comparatively little in the abdomen; eyes became enormously swollen and inflamed before death; pulse 120; nervous symptoms severe; great agitation; evidently fatal from the onset; countenance changed; rapid pulse; hurried breathing.	V.S. ℥xij., calomel, opium, leeches, cathartics. Every thing escaped by vomiting.	Died. The child died of erysipelas of the nates and abdomen; violent inflammation of the eyes.

158	A lady in Westminster. Protracted labour. 17th Jan. 1835.	Acute pain, increased by pressure in the hypogastrium; sickness and vomiting; extreme restlessness; breathing hurried; pulse rapid; lochia not suppressed; symptoms relieved for a short time by bleeding and leeches, but they returned; the abdomen became tympanitic; there was incessant vomiting, and she died in 30 hours. Died 18th of January.	V.S. ℥xxiv., leeches xxv., leeches l., calomel gr. x., opium gr. iss., 2da q. q. hora.	Died. Her infant died soon after from erysipelas.
159	Case; British Lying-in Hospital. Twins. 25th April, 1835.	Did not see this patient during life, but was informed that the pain in the region of the uterus had never been intense, that the abdomen became swollen and tympanitic, the tongue dry and brown, with great debility towards the termination. No sickness nor delirium before death.	Depletion not employed. Anodynes and saline diaphoretics, I believe, were the remedies, and afterwards wine and stimulants.	Died. Uterus and intestines coated with lymph; left appendages destroyed by inflammation; the placenta had adhered to this side of the uterus; veins of this contained a thin purulent fluid; pus between the muscular fibres of the part, not contained in veins; a small quantity of pus in the veins of the cervix.
160	Case; Bruton Street; a young unmarried woman; not in the puerperal state. 9th May, 1835.	A young woman who had for some time been chlorotic, and had menstruated sparingly. Suffered for some time from pain in the back and left hip, and fever, after exposure to cold. 7th May: a swelling took place in the upper part of the foot, then in the calf of the leg and thigh. The whole left inferior extremity smooth, swollen, hot, colourless, looking like alabaster. Superficial veins of the limb distended with blood. The femoral vein in the upper part of the thigh hard and painful along its whole course. Vomiting, and symptoms of low typhoid fever, took place, and she died on the 21st May.	Leeches repeatedly, calomel, opium, &c.	Died. Vena cava, left common and internal iliac veins, and femoral, thickened, lined with false membrane, and plugged up with coagula and blood; the internal iliac was most severely inflamed, and its branches contained lymph and pus; the disease of the femoral vein originated in the vein of the cervix uteri.

LECTURE XXXIX.

ON THE CAUSES AND NATURE OF INFLAMMATION OF THE UTERUS AND ITS APPENDAGES IN PUERPERAL WOMEN.

The causes of inflammation in the uterine organs after delivery are often involved in the deepest obscurity. By examining the preceding table, you will see that in a very large proportion of cases the disease occurs after natural labours, and cannot be referred to injuries inflicted upon the uterus by violence of any kind during parturition, or to exposure to cold and moisture, and irregularities of diet committed soon after delivery. The disease has been observed by me to prevail during the last fifteen years, and to assume the different forms described in the last lecture, during spring, summer, autumn, and winter, though most frequently in the latter season, not only in the British Lying-in Hospital, the Lying-in Wards of the Saint Marylebone, St. James's, and other parochial infirmaries, but in every district of London, and the surrounding country; and in all the different ranks of life. The disease has generally arisen, like inflammation of the bowels and lungs, and other viscera, without any assignable cause — where the process of parturition had been completed in the most natural manner, where nothing could be discovered peculiar in the constitution of the atmosphere, and when typhous fever, scarlet fever, erysipelas, and other contagious and epidemic disorders, were not prevailing to an unusual extent. But it is an opinion which has long prevailed, that the uterine inflammation of puerperal women is of an erysipelatous nature, and that it is excited in some cases by contagion, or depends on a vitiated state of the atmosphere, like hospital gangrene, and may be communicated from one patient to another, by the nurse and medical practitioner. It is stated by Peu, that, in 1664, a prodigious number of puerperal women perished in the Hôtel-Dieu at Paris, and that the cause of the mortality was attributed by M. Veson, a physician to the hospital, to the circumstance of the lying-in wards being situated immediately over those set apart for the reception of wounded persons. The bodies of the women were found after death to be full of abscesses. Uterine phlebitis was probably the cause of this great mortality, as I have found it to be most frequently where inflammation of the uterus has appeared to be excited by the contaminated air of an hospital, contagion, and erysipelas. Ponteau regarded the disease which appeared in the Hôtel-Dieu at Lyons, in the spring of the year 1750, and produced a great havoc among puerperal women, to be an epidemic erysipelatous inflammation of the peritoneum. The same opinion of the nature of the affection was maintained by Dr. Lowder, and Professors Young and Home, of Edinburgh, who saw the disease in the lying-in wards of the Royal Infirmary. Dr. Gordon, of Aberdeen, states that he had unquestionable proof that the cause of the disease was a specific contagion, and not owing to any noxious constitution of the atmosphere. The constitution of the year, as it was termed by Sydenham, had little or nothing to do with its production. The disease seized such women only as were visited or delivered by a physician, or taken care of by a nurse, who had previously attended patients affected with the disease. "I had abundants proofs," he observes, "that every person who had been with a patient in the puerperal fever became charged with an atmosphere of infection which was communicated to every pregnant woman who happened to come within its sphere." He acknowledges that he was himself the means of conveying the infection to a great number of women. "If the puerperal fever of Leeds was infectious, which by many it was thought to be," says Mr. Hey, "it was so in a very inferior degree to that at Aberdeen; for I have known instances of free communication, by the intervention of others, between women in labour or child-bed, and those affected with the disease, without any bad consequences. And, on the contrary, in many cases of puerperal fever no channel whatever was discoverable whereby the disease could have been conveyed. It was not from being convinced of its necessity, but for the satisfaction of his own mind and the safety of his patients, that he adopted the usual precautions to prevent the propagation of an infectious disorder. Dr. Armstrong observed that most of the cases at Sunderland, forty out of fifty-three, occurred in the practice of one surgeon and his assistant. He believed, at first, that the disease, as an epidemic, was invariably contagious; but afterwards had reasons for doubting whether it was so in the ordinary sporadic form. "It is hardly possible to prove," says Dr. J. Clarke, "that it is not infectious, but it has also arisen, as far as we can judge, as an original disease, where there had been no communication with infected persons."

Dr. Hulme maintained that uterine inflammation in puerperal women was not more contagious than pleuritis, nephritis, or any other inflammatory disease. Dr. Hull, of Manchester, was also of opinion that it is not contagious. M. Tonellé, who has recorded the history of the most fatal epidemic which has ever occurred in Paris, asserts that the idea of contagion was clearly out of the question in the Maternité there, for the women who were newly delivered had each a separate apartment, and yet were attacked with the disease; whilst in the sick ward of the hospital no instance of the propagation of the disease ever occurred. The evidence of M. Dugès against the doctrine of contagion is not less strong; for he states that in numerous instances pregnant women have been placed in the infirmary, where they were surrounded by cases of peritonitis, without being infected; and that still more frequently he has seen women newly delivered brought into the infirmaries on account of some other complaint, and who did not contract the disease. In no instance did he observe a midwife entrusted with the care of two patients at the same time communicate peritonitis from a sick to a healthy individual, as is reported to have happened in London; and never has this inflammation been propagated from patient to patient in the wards set apart for the reception of healthy women. In the epidemic at Edinburgh, described by Dr. Mackintosh and Dr. Campbell, I believe they saw no case which could be ascribed to contagion.

It is difficult to reconcile this conflicting evidence; and the facts I have observed, though they have led me to adopt the opinion that the disease is sometimes communicable by contagion, and sometimes has a connection with erysipelas, have not perhaps been sufficiently numerous, and of so decisive a character, as to dispel every doubt on the subject of its contagious or non-contagious nature, and to prove that it is a specific inflammation. It is but right to state that, in a vast majority of cases, the disease has occurred, and in the most destructive form, where contagion could not possibly be supposed to have operated as the cause. It has suddenly appeared in the practice of those who had never before seen the disease, or had any thing to do at the time with cases of typhous fever, erysipelas, and other contagious disorders.

In the last two weeks of September, 1827, five fatal cases of uterine inflammation came under my observation. All the individuals so attacked had been attended in labour by the same midwife, and no example of a febrile or inflammatory disease of a serious nature occurred during that period among the other patients, who had been attended by the other midwives belonging to the institution. On the 16th March, 1831, a practitioner, who resides in a populous parish in the vicinity of London, examined the body of a woman who died a few days after delivery, from peritonitis. On the morning of the 17th he was called to attend a private patient in labour, who was safely delivered on the same day. On the 19th she was attacked with the symptoms of uterine phlebitis, severe rigors, great disturbance of the cerebral functions, rapid feeble pulse, with acute pain of the hypogastrium, and peculiar sallow colour of the whole surface of the body. She died on the fourth day after the attack, the 22d of March; and between this period and the 6th of April this practitioner attended two other patients, both of whom were attacked with the same disease in a malignant form, and fell victims to it. On the 30th of March it happened that the same gentleman attended a patient, a robust young woman, seventeen years of age, affected with pleuritis, for which venesection was resorted to with immediate relief. On the 5th of April there was no appearance of inflammation around the puncture which had been made in the median basilic vein, but there had been pain in the wound during the two preceding days. The inner surface of the arm, from the elbow nearly to the axilla, was now affected with erysipelatous inflammation; alarming constitutional symptoms manifested themselves; the pulse was 160; the tongue dry; delirium had been observed during the night.

On the evening of this day the inflammation spread into the axilla. The arm was exquisitely painful; but in the vicinity of the wound, which had a healthy appearance, the colour of the skin was natural; and no hardness or pain felt in the vein above the puncture. On the 6th, patches of erysipelatous inflammation appeared in various parts of the body, on the upper and inner surface of the left arm, and on the sole of the left foot, all of which were acutely painful on pressure. The inflammation of the right arm had somewhat subsided; the pulse was 160; the tongue brown, dry, and furred; restlessness, and constant dozing, and incoherence. When roused she was conscious; the face cold; heat of the surface irregular. On the 7th, pulse rapid; countenance anxious; teeth and lips covered with sordes; somnolence and delirium. The left arm, above the elbow, was acutely painful, and the erysipelas had made no further progress. The patches of erysipelas on the forehead and sole of the foot had disappeared; but there was a slight blush of inflammation on the inner side of the calf of the left leg. The symptoms became aggravated, and she died on the 9th of April. I examined the body with Dr. John Prout on the 11th, and the following morbid appearances were observed. The wound in the median basilic vein was open, and its cavity filled with purulent fluid. The coats of this vessel, and of the basilic vein, as you can still perceive in the preparation of the parts, were thickened so as to resemble the coats of an artery. The inner surface of the vein was redder than natural, and at the upper part had lost its usual smoothness, but there was no lymph deposited upon it. The mouths of the veins entering the basilic were all closed up with firm coagula of blood or lymph. The cellular membrane along the inner surface of the vein was unusually vascular, and infiltrated with serum. This infiltration was to a much greater extent along the situation of the erysipelatous inflammation of the left arm, but the veins of this arm were perfectly healthy. It is highly probable that there was something more than a mere coincidence in these events.

In the autumn of 1829 I was present at the examination of the body of a woman who died soon after delivery, from inflammation of the peritoneal and muscular tissues of the uterus. I dissected out the uterine organs, and after inspecting them carefully, assisted in sewing up the body. I had scarcely reached home when I was hastily summoned to attend a young lady in her first labour, who was soon safely delivered; but in sixteen hours she was attacked with violent pain in the region of the uterus. Unequivocal symptoms of uterine phlebitis soon after showed themselves: she recovered, but with great difficulty. In December, 1830, two patients in the British Lying-in Hospital, who had both been attended by the same midwife, were attacked with the disease on the same day; and both died from inflammation of the absorbents and deep-seated structures of the uterus. Another patient was admitted into the hospital two days after the death of the last of these women, and was examined by the same midwife, to ascertain if labour had commenced. The pains were false pains; but she remained from Saturday till Monday in the hostal expecting that labour would come on. The pains having left her, she returned home; and the following day was suddenly taken in labour, and safely delivered before she could be sent to the hospital. She went on favourably for two days, and was then attacked with the most violent symptoms of inflammation of the veins of the uterus, and died in thirty-six hours.

In 1835, a surgeon, residing at the west end of London, while attending a gentleman who had phlegmonous erysipelas of the leg and extensive sloughing of the cellular membrane, was called to a case of labour, which was speedily followed by inflammation of the uterus, and proved fatal. The body was not examined; but, from the symptoms, there could be little doubt that both the peritoneal and vascular structures were affected. A second case occurred in his practice within a few days, which also terminated fatally. Soon after, a third case occurred to him, the unfavourable result of which he attributed to the copious venesection employed immediately after the invasion of the disease. He was very unhappy at the thought of having destroyed the patient by bleeding her so profusely, and could not feel satisfied that her death was owing to any other cause than excessive depletion, although the quantity of blood removed barely exceeded twenty ounces, till I inspected the body and showed him a great portion of the veins in the walls of the uterus, where the placenta had adhered, loaded with pus. The affair here ended with Mr. ——, but not so with me; for the same evening, after examining the body of this patient, I was requested to see a lady in consultation, whose labour was protracted, and an opinion required respecting the propriety of interfering, and completing the delivery by artificial means. I examined the patient, and recommended delay; and in a few hours she was safely delivered of a living child by the natural efforts. In twenty-four hours, this lady was attacked with peritonitis in the most violent possible form, and died in less than forty-eight hours with incessant vomiting, and great tympanitis. The infant was cut off in no long time with erysipelas. A few days after this, having changed my clothes completely, and adopted every means that I could think of to prevent any further mischief, I attended a private patient residing near Oxford Street, whose labour was natural, and whose recovery after her two former deliveries was favourable: but in less than thirty hours she was attacked with acute inflammation of the uterus, which no remedies could subdue. The following facts are, if possible, still more striking, and leave no doubt whatever upon my mind that it is our duty to act in all cases as if the contagious nature of the disease had been completely demonstrated.

On the morning of the 4th of August, 1836, a practitioner, who resides in a large healthy village about seven miles from London, with a populous country around, attended Mrs. O—, in labour, which was natural. The same evening he was called to a case of arm presentation, where, from the rigidity of the os uteri, and violence of the contractions, he found it impossible to deliver by turning, and he sent to request my assistance for Mrs. B—. The child was premature, and had been dead some time, so that I had no difficulty in drawing down the extremity, which presented deep into the pelvis, passing the fingers along the thorax and abdomen to the nates, and extracting the lower extremities, and then the trunk and head of the child. No violence was necessary in effecting the delivery, and it seemed probable the patient would recover in a favourable manner. On the following morning, Thursday, August 5th, Mrs. O—, who had not been visited in the interval from her delivery, was attacked with all the usual symptoms of severe uterine inflammation, and ultimately died. As Dr. —— had not seen this patient from the time she was delivered, on the morning of the 4th, to the period of the attack, it is obvious that he could have communicated no contagion from Mrs. B—, whose labour occurred the same evening, and whose child had died within the uterus, and presented preternaturally. No case of severe uterine inflammation had ever come under the observation of Dr. ——, though he had resided eight or ten years in the same village, and had attended numerous cases of labour. At this time there was no case of erysipelas under his care, and for a long period he had not examined any dead bodies. Mrs. B—, who was delivered on the 4th of August, was attacked on the 6th with all the symptoms of uterine phlebitis, and died on the 9th. I examined the body with Dr. —— and his assistant on the 10th and found extensive peritonitis, and all the veins and absorbents on the left side of the upper part of the uterus, where the placenta had adhered, filled with pus. As the coats of the absorbents were not thickened, I suspected that the pus they contained had been absorbed by them from the veins. The left ovarium was large and soft, and the left fallopian tube inflamed. The os and cervix uteri were sound. On the evening of the 10th of August, after examining the body of this patient, on returning home, I adopted every means I could devise to prevent the communication of any poison to others, but without effect, for early the following morning I was called to a private patient near Lincoln's-Inn Fields, who was soon safely delivered, but was seized in less than twenty-four hours with a violent fit of cold shivering, acute pain in the region of the uterus, especially on the right side and sacrum, headache, ringing in the ears, and intense thirst. The countenance was pallid and depressed when I first saw her: the pulse was 120, with nausea, sense of chilliness over the whole surface of the body, though it was intensely hot, and covered with perspiration. Bloodletting, general and local, was employed, but sparingly, and calomel, opium, cathartics, turpentine, prussic acid, and creosote, freely, but without the slightest effect, and she died with incessant vomiting of dark-coloured matter like coffee-grounds. Some time before death the pain of the abdomen subsided, and the left leg became exquisitely painful; it soon became livid and swollen around the ankle, the discoloration extended rapidly up the limb, the cuticle separated, and dark-coloured vesications were formed. The disease extended no further in my public or private practice, but another patient, attended by Dr. ——, soon after was destroyed by it. The assistant of Dr. —— was attacked a few days after the post-mortem examination of Mrs. B — on the 10th August, at which he was present, with strong febrile symptoms, sickness at stomach, headache, sore-throat, and great prostration of strength. The tonsils became covered with foul superficial ulcers, the lower lip swollen, and covered with a pustular eruption; the tongue was intensely red at the point and on the edges, and covered in the middle with a thick white fur. These symptoms lasted for a week, and then went off, leaving him in a state of great debility. The cook in the family became affected a few days after with similar, but much milder, symptoms. I was informed that the carpenter, a young healthy man, who placed the body of Mrs. B — in her coffin, had afterwards a most violent attack of fever and sore-throat, and recovered but with difficulty. The train of misfortunes did not end here, for an aged relative of Mrs. B —, who was in the apartment when I examined the body, was seized soon after with severe symptoms, like those of continued fever, and died after a few days' illness.

In 1839 in London, and in 1841 at Woolwich, several similar occurrences, but of less striking character, took place, which also came under my observation, and they all point out the necessity of taking every precaution to prevent the extension of the disease from one puerperal woman to another, not only by careful and repeated ablution, and changing the clothes after attending patients who are affected with it, but, what is far more efficacious — indeed the only thing to be trusted to — by discontinuing obstetrical practice altogether for a time when several cases occur in rapid succession. The great mortality in lying-in hospitals arises chiefly from the occurrence of uterine inflammation, and its spreading from patient to patient, or becoming epidemic in the wards. This circumstance induced me to make the following observation ten years ago, the truth of which is amply illustrated by the accompanying tables: — "From the registers of the British Lying-in Hospital, the Maternité at Paris, the Dublin Lying-in Hospital, and the tables of M. De Chateauneuf, it is proved that the average rate of mortality greatly exceeds, in these institutions, that of those in which individuals are attended at their own habitations; and if it should ultimately appear that all precautions are unavailing in diminishing the numbers attacked by the disease, it becomes a subject deserving of the most serious consideration, on the ground of humanity, whether lying-in hospitals should not be altogether abolished, as injurious rather than beneficial to society. From what has fallen under my observation in the British Lying-in Hospital, and other similar institutions in this metropolis, where the utmost attention is paid to ventilation and cleanliness, and where the wards are not overcrowded with patients, I cannot hesitate to express my decided conviction that by no means hitherto discovered can the frequent and fatal recurrence of the disease be prevented in lying-in hospitals, and that the loss of human life thereby occasioned completely defeats the objects of their benevolent founders."

LECTURE XL.

HISTORICAL ACCOUNT OF UTERINE INFLAMMATION IN PUERPERAL WOMEN.

We know from the ancient writers that puerperal women have been liable in all ages to attacks of inflammation of the uterine system. In the works, however, of the earlier authors, its history is short and imperfect; and it is probable that the disease did not attract the particular attention of physicians before the middle of the 17th century, when it occurred at Paris as a malignant epidemic in the lying-in wards of the Hôtel-Dieu, and the bodies of those who died of it were found to be full of abscesses. Since that period it has often been observed in the principal cities and lying-in hospitals of Europe, both in a sporadic and epidemic form, and has been denominated by medical authors puerperal fever, child-bed fever, puerperal peritonitis, peritoneal fever, puerperal typhus, the epidemic disease of lying-in women. Upwards of 200 cases of this disease have come under my observation since the spring of 1827, the histories of 160 of which have been reduced into a tabular form. I have watched the symptoms and progress of these cases with the closest attention; observed the effects of the different remedies employed, and where death took place I carefully examined the alterations of structure in the uterine and other organs. The bodies of a great number of women have been inspected by myself personally: this task was not delegated to others ignorant of the pathology of the uterine system; and in all, without one single exception, there was some morbid change, decidedly the effect of inflammation, either in the peritoneal coat of the uterus or of its appendages, in the muscular tissue, the lining membrane, or in the veins or absorbents of the organ, which accounted in a most complete and satisfactory manner for all the constitutional disturbance which had taken place during life. The ganglia and nerves of the uterus were the only structures which were not examined. These observations entirely subvert the opinion that there is a specific, essential, or idiopathic fever, which attacks puerperal women, and which occurs independently of any local affection in the uterine organs, and may even prove fatal without leaving any perceptible change in the organization of any of their different textures. As the constitutional symptoms thus appear invariably to derive their origin from a local cause, as the local affection is always uniform, and nothing else is so in the history of the disease. I have thought that it would be more philosophical, and more consistent with the correct principles of nosological arrangement, to banish entirely from medical nomenclature the terms puerperal and child-bed fever, and to substitute in their place that of uterine inflammation, or inflammation of the uterus and its appendages in puerperal women. The confusion and error which have hitherto prevailed on this subject have recently been aggravated by a futile attempt to include under the term "puerperal fevers," not merely the disease usually known by the name puerperal fever, but puerperal intestinal irritation, which is a totally distinct affection; hysteralgia, or what has incorrectly been called false peritonitis, and milk fever. "If, under the head of *puerperal fevers*," says the author of this new and unscientific arrangement, "we are to include all the fevers to which lying-in women are liable, and that are peculiar to the puerperal state, we must not pass over what is commonly called *milk fever*."

Until a recent period, the pathological anatomy of the uterine organs in puerperal women had not received that attention which its importance demanded. In the histories of the different epidemic fevers which have prevailed amongst lying-in women since the middle of the seventeenth century, the symptoms and the morbid appearances, though imperfectly described, nevertheless strongly confirm the conclusion that the whole phenomena, local and general, of these fevers, are to be referred to inflammation of the uterine organs, and that the symptoms vary according as the superficial or the deeper-seated structures are affected. The winter of 1746 at Paris was most destructive to puerperal women, and they died between the fifth and seventeenth day after their confinement. The epidemic attacked the indigent, but much less frequently and severely those women who were delivered at their own habitations than in the Hôtel-Dieu. Of twenty women in child-bed affected with the disease in February of that year, in the Hôtel-Dieu, scarcely one recovered.

M. Malouin has given this history of the epidemic:—"The disease usually commenced with a diarrhœa, the uterus became dry, hard, and painful; it was swollen, and the lochia had not their ordinary course; then the women experienced pain in the bowels, particularly in the situation of the broad ligaments; the abdomen was tense; and to all these symptoms was sometimes joined pain of the head, and sometimes cough. On the third and fourth day after delivery the mammæ became flaccid. On opening the bodies curdled milk was found on the surface of the intestines; a milky serous fluid in the hypogastrium; similar fluid was found in the thorax of certain women, and when the lungs were divided they discharged a milky or putrid lymph. The stomach, the intestines, the uterus, when carefully examined, appeared to have been inflamed. According to the report of the physicians, there escaped clots on opening the vessels of this organ." "This terrible disease," says M. Tenon, in the Mémoires sur les Hôpitaux de Paris, p. 243, "has shown itself at different epochs, and its returns have been more frequent than ever; it reappeared every winter from 1774; it commenced usually about the middle of November, and continued till the end of January. It is met with also at the other seasons of the year, even during spring, for it has come to prevail more and more, and to be as it were naturalized. Those who were attacked in the years 1774 and 1775 died between the fourth and seventh days after delivery, and seven out of every twelve women who were delivered was seized with the disease. Two distinct forms of it were successively observed; one a simple form, which was cured by ipecacuan; the other a complicated form, for which there was no remedy; so that there perished, in 1816, one of every seven of those who were attacked with puerperal fever, and death took place from the sixth to the eighth day after delivery, and often much earlier. The first symptoms manifest themselves twenty-four, thirty-six, or forty-eight hours after delivery, and sometimes, but rarely, in the space of twelve hours. The symptoms of the simple puerperal fever are developed in the following order: rigor, slight pain in the region of the kidneys, intestinal colic, which in two hours affects the whole hypogastrium, and gradually becomes more acute. Pulse concentrated, fever moderate, lochia not suppressed; mammæ flaccid, tongue dry in the middle, covered with a yellow mucus on the edges; hiccup and vomiting of green-coloured matters. There were sometimes combined with these constant and characteristic symptoms of the disease which took place in the years 1774 and 1775, a diarrhœa of a bilious glairy matter, a considerable swelling of the hypogastrium, thirst, and remarkable retention of urine. In the complicated puerperal fever the pyrexia is stronger, with exacerbations, the tongue is black and dry, the belly is tense, distended, and tympanitic, and slightly painful. In some women the lochia have been either wholly suppressed or only diminished; others have experienced attacks of ophthalmia; in some the respiration was difficult; in general the blood showed the buffy coat. On opening the abdomen, the stomach, the intestines, particularly the small intestines, were inflamed, adhering to one another, distended, filled with air and a yellow fluid matter. The uterus was contracted to its ordinary dimensions, and was seldom found inflamed. I had occasion to dissect two: in one the uterus contained a coagulum of blood; an infiltration of a milky appearance, or whey-like fluid, existed in certain women in the cellular membrane which surrounds the kidneys. Sometimes, also, a thick, white, cheesy matter was met with: when the lungs were gorged with blood, or inflamed, emphysematous, an effusion of serum was found in each side of the chest. We did not observe the hemorrhages which occurred in the epidemic of 1664, and the uterus was not found dry, hard, and tumefied, as in that of 1746. In the epidemic of 1774, the lochia flowed, but they did not flow in 1746. "Sauvages, chiefly on the authority of Sennert and Mauriceau," observes Dr. Craigie, in his Elements of the Practice of Physic, "referred the disease to the head of inflammation of the womb, of which he distinguished three forms; the puerperal, the typhoid, or that complicated with malignant fever, and the milky, or that from suppression of the mammary secretion; the first and third, however, equally inflammatory in nature and tendency. In 1770, there appeared in the Hospital of St. Mark, at Vienna, a puerperal epidemic, which Storck regarded as inflammatory; and the disease continued to prevail in the same city for the two ensuing years with great fatality; with considerable abdominal swelling and pain in the hypogastric region: on inspection after death the intestines were found covered by false membrane, and several viscera, and among others the womb, bore marks of inflammation and gangrene. About the same time, the disease, which had originally been noticed by Strother (1718), and Burton (1751), in England, began to attract particular attention. Dr. Denman, the first English author who gave an express account of it, does not appear to have formed any very decided opinion of its nature. He speaks, indeed, of the inflammation of the womb, of the tenderness and pain of the os internum, and of the signs of inflammation preceding those of putridity; but he admits that he never had an opportunity of examining the body of any one who died of this disease, and adopting the appearances mentioned by Lieutaud as accordant with the result of later dissections, is satisfied with saying that the milky matter (materia lactea), with which the intestines were said to be covered, is probably an inflammatory exudation (p. 39). Dr. Manning, who wrote shortly after (1771), like most authors of the day, confounded the pathological or proximate causes with the remote causes, and ascribes all its phenomena to the putrid tendency of the humours." Drs. Hulme and Leake considered inflammation of the omentum to be the proximate cause of the disease, and the latter suspected that the whole mass of circulating blood becomes contaminated by absorption of the fluids effused into the peritoneal sac. "Considering," observes Dr. Leake, "the suppuration of the omentum, and large quantity of purulent fluid found in the abdomen after death, it is easy to see how a secondary fever, which was truly inflammatory at the beginning, may soon become putrid, by absorption of that fluid, which, like old leaven, will taint the blood, by exciting a putrid ferment in the whole mass, and change its whole qualities into that of its own morbid nature. Some of those who survived recovered very slowly, and were affected with wandering pains and paralytic numbness of the limbs, like that of chronic rheumatism. Some had critical abscesses in the muscular parts of the body, which were a long time in coming to suppuration, and when broke discharged a sanious ichor." Dr. William Hunter, on examining the bodies of those who died from puerperal fever, found the viscera and every other part of the abdomen inflamed. There was a quantity of purulent matter in the cavity of the abdomen, and the intestines were all glued together. Pain of the head and abdomen, with fever, were the symptoms which Dr. Lowder considered to be pathognomonic of the disease; and redness of the peritoneum, adhesion of the intestines, effusion of serum mingled with pus and lymph, the most frequent morbid appearances. The history of the symptoms and morbid changes of structure, by Drs. Joseph Clarke, Gordon, Campbell, Mackintosh, and other writers, is nearly the same; and the late Dr. Hamilton, who believed that puerperal fever was a fever *sui generis*, nevertheless admitted that the appearances on dissection were exactly similar to the descriptions generally given by these authors, and that acute pain of the abdomen was a primary and not a secondary symptom of the disease. In the epidemic puerperal fever, which prevailed at Aberdeen between the years 1789 and 1792, Dr. Gordon examined the bodies of three patients who died of the disease, and in each the peritoneum and uterine appendages were inflamed. "The omentum," he observes, "does not appear to be more especially affected than the other productions of the peritoneum; which are all equally and indiscriminately affected. The dissections which I have made prove that the puerperal fever is a disease which principally affects the peritoneum and its productions, and the ovaria. The peritoneum was inflamed, and the omentum, mesentery, and peritoneal coat of the intestines, were all promiscuously affected." He found bloodletting and cathartics to be the most important remedies. Dr. John Clarke admitted that in most cases of the true puerperal fever which he examined, there was some degree of inflammation in the cavity of the abdomen, and that the uterus and the ovaria sometimes partook of the inflammation. In the greater number there was a large quantity of fluid in the peritoneal sac, and all the surfaces of the viscera and of the peritoneum were covered with a crust formed of the solid part of this matter, resembling coagulable lymph. The parts, however, lying under this coat or crust, were not always inflamed. The attempt made by Dr. J. Clarke to distinguish uterine inflammation from the low childbed fever sometimes epidemic, is now universally admitted to have been unsuccessful; there is no distinct limit which bounds them in nature; and all pathologists now admit that these copious effusions into the peritoneal sac are invariably the result of acute inflammation, and not of any peculiar disposition of the vessels of the part, as he supposed. The works of Dr. Armstrong and Mr. Hey contain the histories of two epidemics, in which the leading symptoms were those which are present in cases of abdominal inflammation, and the employment of copious bloodletting, cathartics, and other antiphlogistic remedies, was attended with decided benefit. The actual condition of the uterine and other organs was not, however, ascertained by either of these writers, as they were not permitted to examine the bodies of any of those who were cut off with the disease. Pinel, Bichat, Laroche, and Gardien, found the peritoneum inflamed in so many fatal cases, that they have considered this disease, as Mr. John Hunter did, essentially to depend on inflammation of the peritoneum. --A foreign author, who has subsequently observed the disease, and who entertains the same opinion of its nature, asserts that nothing can be more absurd, more chimerical, or more contrary to the spirit of analysis and observation, than the idea that there is a fever essential or peculiar to women recently delivered. The bodies of 56 women were examined who had died of puerperal fever in the General Hospital at Vienna, in the autumn of 1819, and in all of these, with the exception of two, where delivery had taken place a considerable time previous to death, effusions of sero-purulent fluid were found in the abdominal cavity, and traces of inflammation in one or more of the abdominal viscera. The ovaria and fallopian tubes were always more or less swollen, red, and tender, and the body of the uterus was in consequence of inflammation flabby, tender, and easily broken down with the finger. It is also stated in the report of this epidemic, that the accession of fever is always preceded by marked changes in the whole system, particularly in the uterus, clearly indicating an inflammatory state. The symptoms, indeed, were such, that the inflammation combined with high fever could not be mistaken.

Still more recent, and far more extended and accurate researches, have been made on the morbid anatomy of the uterine system in those who have died of puerperal fever. Of 222 cases examined by M. Tonellé in 1829, at Paris, there were traces of peritoneal inflammation observed in 193. There was more or less redness and increased vascularity of the peritoneal coat of the intestines, or of the mesentery, omentum, or peritoneum covering the uterus, with more or less effusion of serum, pus, or lymph. Changes resulting from inflammation were observed in the uterus and its appendages in 197 cases; which proves that the uterine system was more frequently affected than the general peritoneal sac. Inflammation of the ovaria was observed in 58 cases, and suppuration of them in four, and it appears from another statement that inflammatory lesions of the ovaria were observed in 99 cases. Traces of inflammation of the peritoneum, and in the uterus or its appendages, were found variously associated in 165 cases, and they were found separated in 57. In the substance of the uterus and ovaria there was simple inflammation in 79; superficial softening in 29; deep-seated softening in 20; inflammation of the ovaria in 58; suppuration in 4. In 90 there was purulent matter in the veins; in 32 in the absorbents; in 3 in the thoracic duct; and 9, along with inflammation and suppuration, in the lumbar, inguinal, and other glands: the total changes in the uterus thus amounting to 324. Suppuration within the veins was accompanied with suppuration of the uterus in 32 cases; with softening in 11; with inflammation and softening combined in 5; with peritonitis without any other change in 34;

or without any other lesion in 8. Suppuration within the lymphatics was associated with phlebitis in 20 cases; with metritis in 13; with softening without suppuration of the uterus in 6; with simple peritonitis in 3; without other lesion in 2. Inflammation of the ovaries was distributed in the following manner: associated with simple peritonitis in 29 cases; various changes in the uterus in 27; simple inflammation in 8; softening in 7; suppuration of the vessels in 12; all the previous alterations united in 16.

From all these facts discovered by morbid anatomy, you can now be at no loss to comprehend why inflammation of the uterus in puerperal women is so frequently fatal, so little under the control of remedies, and why it has been so difficult to give a clear and correct delineation of its constitutional symptoms. "The facts disclosed by morbid anatomy," observed the learned pathologist already quoted, "show that all the original descriptions of puerperal fever, however elaborate, from Strother and Denman to the present time, are more or less inaccurate, in so far as they confound together the symptoms belonging to lesions of different parts and tissues." "Much confusion, disorder, and discordance, indeed, have prevailed among practical writers on the number and nature of the distinctions which they admit of the several forms and varieties of puerperal fever. Nor in the recent descriptions by different obstetrical authors does it appear to have been made practicable to avoid ambiguity in distinguishing the symptoms into different forms. Most authors agree that there are varieties in the disorder; but on the number and characters of these great discordance prevails The great difficulty consists in the circumstance that though very generally the disease begins with inflammatory symptoms more or less distinctly marked, yet in almost all cases these are quickly succeeded, and as it were masked or disguised, by symptoms, in which feebleness, languor, listlessness, and mental oppression, occupy a prominent part, and consequently present that general character to which many physicians have applied the name of putrid, typhoid, ataxic, and adynamic. We have seen that J. Clarke considered it as an epidemic low fever of specific character, yet was obliged to admit that it is attended with inflammation of various abdominal and pelvic organs. Peu, Tissot, White, Alphonse Le Roy, looked on it as a putrid, typhoid, or adynamic fever; Antony Petit and Selle thought it a nervous fever; Doulcet ascribed it to a gastric disorder; and lastly, Walter, Johnston, Forster, and Cruikshank, Baillie, Hull, and Hey, deemed it a local inflammation of the peritoneum. The systematic writers have not diminished this discordance, and by the multiplicity of division and refinement in distinction they have rather obscured than elucidated the subject. Boer, the most accurate observer of the nature, character, and tendency of this disorder, distinguished it in 1806 into four forms: the first, the benign puerperal fever, not inflammatory; the second, inflammatory puerperal fever; the third, an anomalous puerperal fever; and the fourth, the malignant puerperal fever not inflammatory. M. Vigarous distinguishes five species of puerperal fever — first, the gastro-bilious, marked by intense hypogastric pain; 2d, the putrid-bilious, distinguished by great debility, small intermitting pulse, hypogastric swelling, with frequent pain, and putrid symptoms; 3d, the pituitous or mucous; 4th, the phlogistic or uterine inflammation, denoted by sense of great weight in the pelvis, hypogastric swelling, pain and hardness, with acute fever; and 5th, sporadic puerperal fever, proceeding from mental emotion, distress, &c. Gardien recognizes six varieties of the disorder — 1st, the angiotenic or inflammatory; 2d, the adeno-meningeal or mucous; 3d, the gastric or bilious; 4th, the adynamic or putrid; 5th, the ataxic or nervous; and 6th, that complicated with affection of other organs. These varieties, M. Martin, of the Hôpital de la Charité, at Lyons, augments to seven, in the following manner: — 1st, the gastric, the most frequent, often complicated with worms, with epigastric pain, headache, and full pulse; 2d, the intestinal, also complicated with worms, with meteorismus, borborygmi, and diarrhœa; 3d, the epidemic puerperal, assuming the character of the prevailing epidemic constitution; 4th, puerperal fever from retention of the placenta, first inflammatory, then adynamic or typhoid, with hard, painful hypogastrium, small pulse, and faintness; 5th, adynamic or putrid puerperal fever, succeeding the gastric variety; 6th, puerperal uterine inflammation, marked by fixed pain in the region of the womb, suppression of the lochia, hard pulse, redness of the margins of the tongue, dry skin, and porraceous vomiting; and 7th, and lastly, puerperal fever consequent on mental emotions, profuse hemorrhages, copious external suppurations, or purulent deposits in the substance of organs, always terminating in ataxic or nervous symptoms. Still more recently, Dr. Samuel Cusack distinguished the disease into three forms — 1st, the genuine inflammatory, marked by acute abdominal pain and tenderness, quick hard pulse, and other symptoms of synocha; 2d, the low or typhoid, generally epidemic, and allied to erysipelas and typhous fever, and similar low disorders, without tenderness, but with dull weight in the hypogastrium, weak languid pulse, and a sense of great faintness; and 3d, a mixed form, partaking of the characters of both, with abdominal tenderness, yet with the pulse neither so hard and incompressible as in the first, nor so weak as in the second variety. M. Tonellé refers all the varieties of the distemper which he observed under M. Desormeaux to three principal forms: an inflammatory form, a typhoid, and an anomalous or ataxic form; which, he thinks, correspond to the different lesions of the solids, of the fluids, and of innervation. The inflammatory form he further subdivides into two varieties: one in which the inflammatory symptoms were open, distinct, and permanent; the other in which they were transitory, and were speedily followed by typhoid symptoms. The second variety and the typhoid form were by far the most prevalent, and were generally, if not invariably, associated with softening of the womb, and purulent matter within the veins and lymphatics, whether that were the effect of venous inflammation, or received within their interior by absorption. This division has been modified by Mme. Boivin and M. Dugès, who admit only two forms, one the simple inflammatory, or metro-peritonitis angiotenica, with strong, full, hard pulse; the other the typhoid, in which, though the symptoms are at first inflammatory, a secondary adynamic state speedily ensues, with small, contracted, oppressed pulse, burning heat, intense thirst, and great oppression of all the vital and animal motions; and they refer to the latter both the typhoid and the ataxic form of MM. Desormeaux and Tonellé. Lastly, Dr. Lee, discarding the name and nosological characters of puerperal fever and puerperal peritonitis, as hitherto maintained by authors, considers the several febrile disorders ensuing on parturition as essentially dependent on inflammation of the womb and its appendages; and the different forms which they assume as referable to the circumstance of affection of the serous, muscular, or venous tissue of the organ. Little doubt can be entertained that, so far as our knowledge of the relations between the external symptoms and the affection of the internal organs goes, this view is the most rational. If it be still imperfect, that is rather to be attributed to the circumstance, that in very few cases, perhaps, is one tissue exclusively affected, and consequently it is difficult, if not impracticable, to connect in any given case the external signs with any single lesion. The symptoms of mere peritoneal inflammation are modified, or it may be obscured, by those arising from ovarian or tubal inflammation, inflammation of the substance or inner surface of the womb, or the symptoms of uterine venous inflammation. This circumstance shows at once that the terms of typhoid, or adynamic, or ataxic puerperal fever, whether applied to forms or stages of puerperal fever, must convey a most erroneous notion of the pathological nature of the disease, and are in every respect inadmissible. Puerperal and typhous fever agree in no circumstance, unless in their concluding stages, namely, the production of the fatal event."

LECTURE XLI.

ON THE TREATMENT OF UTERINE INFLAMMATION IN PUERPERAL WOMEN.

Like inflammation of other organs, that of the uterine system varies greatly in severity in different cases and at particular periods, and in some individuals at all periods there is a disposition to the disease manifested after delivery, by tenderness of the hypogastrium on pressure, and by acceleration of the pulse, where inflammation has not been actually developed, or where it has taken place in so slight a degree as to yield readily to the exhibition of opiates, and the application of warm fomentations and poultices over the region of the uterus. Some practitioners have been so convinced of the advantages and necessity of employing these remedies with the view of preventing attacks of the disease, that they caused all their patients recently delivered to take, from time to time, and at intervals more or less distant, small doses of Dover's powder, and have applied emollient poultices to the hypogastrium. In cases of intestinal irritation, after-pains, and various spasmodic affections of the uterus and abdominal viscera, this plan of treatment will prove successful. In slight inflammatory affections of other organs it is not unusual for the symptoms to subside without the employment of more active remedies, and it scarcely admits of a doubt that in some of the milder varieties of inflammation of the uterus a spontaneous solution of the disease not unfrequently takes place. But where inflammation of the peritoneal coat of the uterus is fully developed, and where the affection occurs in a severe sporadic or epidemic form, the soothing plan of treatment, by opiates and warm poultices over the hypogastrium, will prove wholly insufficient to arrest its course, and unless bloodletting, general and local, and other antiphlogistic remedies, be early and vigorously employed, it will, in most cases, proceed to a fatal termination. In no inflammatory affection of the internal organs are the good effects of bloodletting, general and local, more strikingly displayed than in puerperal peritonitis; but the results of my experience do not confirm the accuracy of the opinion, that in all cases, by the employment of these means, we can succeed in arresting the progress of the disease, which is always attended with the greatest danger, and not unfrequently rapidly runs its course to a fatal termination in spite of the most prompt and copious depletion, and the application of all other remedies. When the symptoms of puerperal peritonitis manifest themselves as before described, and especially when there is intense pain of the uterus, increased by pressure, twenty or even more ounces of blood should be immediately abstracted from the arm by a large orifice, and while the patient has the shoulders and trunk considerably elevated in bed. We should not be deterred from employing the lancet freely, because the pulse is small and contracted, provided it does not exceed 120 or 130 in the minute, for in some cases the pulse has become fuller and stronger during the time the blood has been flowing, or soon after. Even where the pulse is still more rapid and feeble, if the local pain be very great — this is here a far safer guide than the pulse — we must not be deterred from employing venesection to the requisite extent, and in all cases, if possible, a decided impression should be made upon the system, and where syncope or faintness follows the bloodletting, it increases the salutary effect. In no case of inflammation of the peritoneal surface of the uterus and peritoneal sac have I seen any bad consequence to result from depletion carried to this extent, and in many, from its early use, the force of the disease has at once been completely broken, which could not have been the case had the inflammation been erysipelatous or of a specific nature. In reflecting upon the cases contained in the accompanying tables, and observing the number which terminated fatally, it is impossible to avoid the conclusion, that some patients were lost from the want of active depletion at the commencement of the attack. In many, the disease had been fully formed twenty-four hours or longer before the patients were seen, and then bloodletting was employed so sparingly as to exert no influence on the progress of the disease. When the attack of peritoneal inflammation is violent, and when the pain is but slightly relieved, the venesection should be followed without loss of time by the application of one, or two, or three dozen of leeches to the hypogastrium, proportioning their number to the urgency of the symptoms. When the leeches have fallen off, the bleeding from their bites should be encouraged by warm fomentations, or by a thin, warm, linseed-meal poultice, which should be frequently renewed while the bleeding continues. At the same time five grains of calomel should be administered in combination with five grains of James's powder, and gr. iss. or gr. ii. of opium, or with six or eight of Dover's powder, and this should be repeated every three or four hours until the symptoms begin to subside. The exhibition of purgatives along with the calomel, till the bowels are freely evacuated, is always of the utmost consequence. There are comparatively few cases in which it is necessary to have recourse to a second bleeding from the arm, and where the propriety of this is indicated by the imperfect relief, or renewal of pain, the quantity of blood taken away seldom ought to exceed fifteen ounces. The quantity which requires to be withdrawn in the first bleeding seldom exceeds twenty-five ounces, and in the second fifteen ounces; but there are exceptions to this, and cases of puerperal peritonitis undoubtedly have occurred in which more copious depletion was had recourse to with decided advantage. Where the pulse has become much more rapid and feeble after the first bleeding, and the strength has appeared to be much impaired, even if the uterine pain continues, blood should not be drawn a second time from the arm. Six or eight hours after the first bleeding, should the pain continue undiminished in violence, and the pulse be full and not very rapid, and the strength of the patient but little impaired, a second venesection to the extent above stated may be ordered, not only with safety but with decided advantage. The great mortality which has taken place in this and in the other varieties of uterine inflammation, certainly cannot be attributed to the abuse of bloodletting, for you will observe in the tables that the greater number of those patients who were bled early and copiously, recovered, and that most of those who died were either not bled at all, or very late and sparingly, or took stimulants. After the violence of the attack has been subdued, it is proper to continue the use of the mercury, but in diminished doses; two grains instead of five every four or six hours, combined with opium or Dover's powder, will be sufficient; and this should be continued until the mouth becomes affected, or until the uterine tenderness be greatly relieved. The object in administering mercury in uterine inflammation is the same as in iritis; to remove the congested and inflamed state of the vessels of the peritoneum, and to prevent the disease from terminating by effusion, when all remedies are generally unavailing. Bloodletting, general and local, the exhibition of mercury with opiates and purgatives, are the principal means which we possess in the treatment of cases of puerperal peritonitis, and they often check the progress of the disease. But they have little influence over inflammation of the veins, absorbents, and muscular coat of the uterus, and I am not aware of the existence of any means by which it is possible for us to stop the progress, or counteract the effects, of such destructive morbid actions as those which produce suppurative inflammation of the uterine veins, and of the ovaria and fallopian tubes, and gangrenous softening of the walls of the uterus. The greater number of these cases will, I fear, always terminate fatally, whatever plan of treatment be adopted; the lesions discovered by morbid anatomy have rendered this too obvious. The symptoms in these cases from the commencement have generally been such as to contraindicate the use of general bloodletting. Where the reaction at the invasion of the inflammation has been violent, and venesection has been employed, the relief obtained has only been temporary, if at all experienced; in some, blood would not flow when a vein was opened in the arm; and in a few others, the abstraction of only a few ounces has produced alarming faintness. When the local pain is severe, which it seldom is, leeches and warm fomentations seem to be the appropriate remedies; but as I have already stated, we possess none which effectually control the progress of the deep-seated inflammation of the uterus. Some foreign physicians are, however, of a contrary opinion, and are satisfied that we possess a powerful remedy, even in the worst cases, in mercury employed so as to excite salivation. In several cases of uterine phlebitis, I have pushed this remedy, by inunction, to a great extent, and brought the system under the influence of mercury in less than twenty-four hours; yet the progress of the symptoms was not arrested, and the patients died as others had done where the remedy had not been administered. In other cases I have employed mercury to a great extent, internally, without the slightest benefit; and it may justly be doubted, from the results of M. Desormeaux's practice, whether or not it possesses the influence M. Tonellé supposes; for, of forty-three cases where mercury was used as the chief remedy, only fourteen recovered. In the latter stages of inflammation of the deep-seated structures of the uterus, the great depression of the powers of the system renders the liberal administration of stimulants necessary; and in a few cases of uterine phlebitis the lives of the patients appeared to be preserved by them.

In the Elements of the Practice of Physic, by Dr. Craigie, there is contained the following excellent account of bloodletting in the uterine inflammation of puerperal women. You will see that he has recommended a much more vigorous application of it than I have done; and probably he is right in this, and that I would have been more successful if I had been more energetic in the use of the remedy.

"That bloodletting is a powerful and effectual remedy is shown, not only by the experience of Hulme, Leake, and Gordon, but more recently by that of Hey and Armstrong. But in order that it be effectual, two things are requisite: first, that it be carried to sufficient length; and secondly, that it be practised as early as possible, at the commencement, or at least within the first twenty, in many within the first twelve, hours of the disease. On the quantity of blood to be taken a great revolution has taken place in this and other inflammatory disorders. Thus, Hulme and Leake talk of eight or ten ounces as a great bleeding, which will do much good; whereas Gordon carried it to twenty or twenty-four: and as all his patients who were blooded to that extent in the beginning had speedy and perfect recoveries, he did not think it expedient to carry it further. It is different with Armstrong and Hey, the former of whom occasionally carried it to thirty ounces at the first, and the latter in one case to fifty-two ounces (24th); and I found it necessary to detract forty ounces from a plethoric young woman at once, with the best effect, in puerperal fever. But though I mention these facts, to give some idea of the quantity requisite to be taken in order to produce some check on the disease, it must not be imagined that it is possible to fix it in precise terms. In one subject, sixteen or twenty ounces may produce as great an effect as thirty or forty in another; and the best rule is to bleed until we have proof that the effect is produced. The most decisive and least equivocal proofs are, fainting, either approaching or actually come on, and abatement or entire cessation of pain in the belly. If one bloodletting be not succeeded by one or other of these effects, a second, third, or even a fourth, at the interval of even a few hours, ought to be practised. This is the manner in which Hey and Armstrong appear to have practised bloodletting, rather than by one copious evacuation; and in some instances fifty, sixty, or even eighty, ounces of blood were lost before the disease began to yield. In one of Armstrong's cases, fifty ounces were drawn in three operations; and in another, by four copious bleedings and two small ones, eighty ounces were lost before the abdominal inflammation was subdued. In like manner, in one of Hey's cases, thirty ounces within the first four hours were taken at one bloodletting; at a second, ten; and at a third, eleven — fifty-one before the symptoms of abdominal soreness had abated; yet, as pain returned, fifteen more ounces were taken from the arm, and a few from the belly, by cupping and leeches. In another case, twenty-five ounces were drawn at the first; after the interval of a few moments nine ounces more; and before the arm was finally tied up six ounces more;—making in all forty ounces, after which the patient became faint, and the pulse fell from 112 to 88; yet pain recurred, and was relieved permanently only by taking eight ounces more about six hours after. In another (22d), twenty-four ounces were taken at the first, with the effect of causing faintness and reduction of the pulse from 100 to 72, and about twelve hours after, in consequence of the pain returning, twelve ounces more, in all thirty-six. In a fourth case (25th), five hours after the first sensation of pain, thirty-three ounces were taken from a large orifice, and quickly, with the effect of removing soreness and pain, but without causing fainting, and about twelve hours after twenty ounces, ere the symptoms of the disease were sensibly abated. In short, the simplest rule is to detract blood quickly, and from a large opening, till the pulse becomes softer, or less frequent, or the pain is relieved, or the patient begins to faint. In some cases the pulse remains unchanged, or, instead of becoming slower, becomes quicker; and then it is best to be guided by the approach or occurrence of fainting, and alleviation of pain; and in the event of this last symptom, with or without quick pulse, recurring, it is always wisest to repeat the evacuation. If the pain and soreness of the belly be not removed, or very materially alleviated, in six hours, the bloodletting ought to be repeated; nor should a considerable degree of faintness, or even absolute *deliquium animi*, warrant the opinion that further bloodletting is either unsafe or unnecessary, so long as pain of the belly continues.

"The rapid course of this disease renders early bloodletting of the utmost importance. It is not well ascertained at what precise period of the disorder the inflammation may be incapable of being rendered amenable to suitable evacuation. Hey remarks, on this subject, that the disease may terminate fatally in forty-eight, or even in twenty-four hours, and he records one in which this took place in less than eighteen hours. But though these facts be of some consequence in showing with what promptitude remedial measures ought to be administered, they do not inform us how far bloodletting may be expected to be beneficial at any given period of the disease. The great point is to institute this remedy before effusion of sero-purulent fluid has taken place, or at least before it has gone to much extent; but as nothing very certain is known regarding this, further than that it will take place at different periods in different cases, it is manifest that no general rule can be established, and that the practitioner must draw his conclusions as to the propriety of using it, from the history of the case and the existing symptoms. Hey states that he knew bloodletting successful in a few cases in which a delay of more than twenty-four hours had been incurred, and he instances several of his own cases in which bloodletting was practised with success thirty, and even forty, hours after the commencement. This delay, however, ought never, if possible, to be permitted to take place, and it is always desirable to institute the evacuation at least within twelve hours from the first sensations of pain in the belly. In cases where earlier notice is given, this evacuation will be more effectual the nearer it is performed to the commencement of the disease. The most difficult and delicate point is to determine when it is too late to practise bloodletting. It is evident that the longer it is deferred the more violent will the disease become; and as its effects very early begin to take place, in lymphy exudation, and sero-purulent effusion within the peritoneum into the substance of the ovaries and the fallopian tubes, the great object is either to prevent or to arrest this process by timely suspension of inflammatory action. For the purpose of establishing a rule as to the time and period of bloodletting, Armstrong has divided the disease into the two stages of excitement and collapse, in the first of which only this remedy is admissible. But as it may terminate in twenty hours, or extend to seventy in the acute forms of the disease, and is even more protracted in that which is termed subacute, it is obvious that no very precise rules can be derived from this principle. It is also to be remembered that, in not a few cases of puerperal fever, especially if attended with symptoms of uterine *phlebitis*, even the first or inflammatory stage presents so many marks of languor, oppression, and weakness, that an experienced observer might imagine the termination of the disease to be at hand, when bloodletting, if not injurious, must at least be useless. It is therefore indispensable not only to attend to the existing symptoms, but to inquire into their previous course and duration. When this has been determined, bloodletting should be performed only if pain of the belly be still felt, if the skin and extremities are not cold and moistened with sweat, and if there be reason to believe that effusion has not taken place, or is inconsiderable. If, on the contrary, there is no pain but weight of the belly, if, with an extremely quick thready pulse, the extremities are cold, and the person covered partially with chill damp sweats, and if the belly be distinctly distended with much sero-purulent fluid, no benefit can be expected from bloodletting."

Dr. Ferguson states that he has observed four different forms of puerperal fever — the peritoneal, the gastro-enteric, the nervous, and the complicated — each possessing very distinct general characters, and requiring for its cure a distinct treatment. Vitiation of the blood is the cause, Dr. Ferguson thinks, of these different forms. "The following is the sum," he says, "of my own experience of bleeding as a remedy in puerperal fever: — of all the means we possess of arresting this malady, I believe bleeding, general or topical, to be by far the most extensively applicable. The cases in which it is not so are exceptions to the rule. Mercury, emetics, opiates, sudorifics, &c., have a more limited range of utility than abstraction of blood. But while I admit this, I am equally certain, that *large* bleeding has not been borne in this malady, generally speaking, during the last twelve years."

Other means, besides those now described, have been recommended by different authors in the treatment of uterine inflammation; such as oleum terebinthinæ, ipecacuan, digitalis, colchicum, and camphor.

Since the oil of turpentine was introduced into practice by Dr. Brenan, the most contradictory statements have been published respecting its effects. In a paper published in the Dublin Hospital Reports, Dr. Douglas observes that in the epidemical and contagious puerperal fever, three drachms of the ol. terebinth., with an equal quantity of syrup and six drachms of water, should be given three or four hours after the exhibition of the first dose of the calomel; and that after the lapse of another hour this should be followed by an ounce of castor oil, or some other briskly purgative medicine. In some instances the oil of turpentine and castor oil may be combined in one draught. The internal use of turpentine is not to be repeated more than twice in any case whatever. "In several cases," Dr. Douglas adds, "where the debility is very considerable, the local bleeding may also be omitted; and in this case a flannel cloth steeped in oil of turpentine should be applied to the abdomen, and allowed to remain on for the space of fifteen minutes. This external application of turpentine, without either its internal use or the aid of bloodletting, I have frequently experienced to be entirely efficacious in curing puerperal attacks; and although I have hitherto omitted to speak of turpentine for the cure of the other varieties of this disease, yet I would not feel as if I were doing justice to the community if I did not distinctly state that I consider it, when judiciously administered, more generally suitable and more effectually remedial than any other medicine yet proposed. I can safely aver I have seen women recover apparently by its influence from an almost hopeless condition; certainly after every hope of recovery under ordinary treatment had been relinquished."

I have not ventured to prescribe in many instances the internal use of ol. terebinth., either in the superficial or deep-seated inflammatory affections of the uterus; but whenever this has been done, it has not only produced a renewal of the pain, but has excited the most distressing nausea and sickness. The results of my own observations, and those of the most accurate observers in this country, coincide very nearly with those which are described as having taken place in the practice of Dr. Joseph Clarke. "In addition to the usual routine of practice," he observes, in his letter to Dr. Armstrong, "numerous trials were made of the rectified oil of turpentine, in doses of from six to eight drachms, sometimes in plain water, sometimes combined with an equal quantity of castor oil. The first few doses were generally agreeable to the patient, and seemed to alleviate pain. By a few repetitions it became extremely nauseous, and several patients declared they would rather die than repeat the dose. In more than twenty trials of this kind not a single patient recovered." In favour of the use of digitalis and colchicum in puerperal fever, little evidence that is satisfactory has hitherto been adduced.

Willis, White, and other physicians, employed *emetics*, and more particularly ipecacuan, in the treatment of puerperal fever, before the year 1782, when Doulcet recommended the exclusive use of these remedies at the Hôtel-Dieu. Most exaggerated reports of the success of his method of treatment were speedily propagated throughout Europe, and many were disposed to consider the results at the Hôtel-Dieu as affording unequivocal proofs of the power of emetics to arrest the progress of the disease when occurring in the most malignant forms. Two hundred women were represented as having been saved to society in the course of one epidemic in Paris, by the administration of ipecacuan at the onset of the attack. It appears, however, from the statement of Alphonse le Roi, that the recovery of so many individuals was attributed, without any just ground, to the peculiar treatment adopted; for the employment of ipecacuan and Kermes' mineral, according to him, was commenced by Doulcet in the lying-in wards of the Hôtel-Dieu, when the epidemic was ceasing, but these means were wholly inefficacious in the months of November and December, and at the beginning of the following year, when the mortality was greater than in 1780, before the remedy of Doulcet was known. M. Tenon affirms that in 1786 the complicated puerperal fever was curable by no means then discovered. From the intense pain of the abdomen, aggravated by the slightest pressure of the hand or by compression of the abdominal muscles, and from the early occurrence of nausea and vomiting in the worst cases of the disease, emetics obviously appear to be little calculated for the relief of the symptoms, and few enlightened practitioners have employed them in this country for the last forty years. Some have gone so far, indeed, as to declare that they are sufficient to produce inflammation where it does not already exist, and that their employment is not only useless, but dangerous and absurd.

Several distinguished continental physicians, as Hufeland, Osiander, and Desormeaux, have, however, continued to employ emetics in the treatment of uterine inflammation, and have supposed that they have derived benefit from their use. M. Tonellé states that M. Desormeaux first made trial of them about the end of 1828, and that great advantage resulted from it. During the greater part of the following year they were again employed, but they succeeded in only a few isolated cases, and most frequently they entirely failed: they never, however, appeared to produce any aggravation of the pain or other symptoms. A new trial was made of them after this, and they were again followed by the most happy results. At the commencement of September, 1829, in the course of a fatal epidemic, and during a cold and moist season, emetics were again had recourse to; and for the two months during which this treatment was pursued, all the sick were not relieved, but a great number were delivered from their sufferings as if by enchantment, and for an instant there seemed to be a renewal of that brilliant success which had followed the adoption of this method by Doulcet and the physicians of the Hôtel-Dieu. But at the end of October emetics gradually lost their influence; and towards the middle of November no advantage whatever was derived from them. In some of the successful cases related by M. Tonellé, it ought to be observed, that forty leeches, and warm cataplasms, had been applied to the hypogastrium before the emetic was given, and in those where the relief was most decided the ipecacuan either produced a profuse perspiration, or acted freely upon the bowels, causing numerous, copious, and bilious alvine evacuations. It is highly probable, from the histories of the successful cases, that the effects of the treatment were referrible rather to the action of the ipecacuan on the skin and intestines than on the stomach, for the relief experienced did not immediately follow the vomiting. M. Tonellé admits that where effusion or suppuration had taken place, emetics were of no avail; and he also relates a number of cases in which the application of leeches to the hypogastrium, and the employment of other antiphlogistic remedies, were followed by speedy and complete relief, where emetics had entirely failed to procure this. In the milder forms of uterine inflammation (and many of the cases related by Tonellé were of this description), it is highly probable that an emetic, which would produce a sudden determination to the skin and a free action of the intestinal canal, would relieve the congested and inflamed state of the uterus, and thus cut short the disease. I have met with no case, however, in which I have considered it safe to administer emetics in any stage of the complaint, and I cannot conceive it possible for a case to occur in which the treatment should chiefly or exclusively be conducted upon the plan of Doulcet.

The application of blisters to the hypogastrium and inside of the thighs and legs, has often been found advantageous where the pain of the hypogastrium has continued severe after the general and local bleeding. The external use of the oleum terebinthinæ has also in some cases unquestionably been followed by considerable relief of the pain; and its effect is more sudden than that of a blister.

Both general and local warm baths have been highly recommended by foreign practitioners. Where the skin was hot, the pain moderate, the strength of the patient not much depressed, the immersion of the whole body in warm water, they state, was often followed by a general perspiration, and relief of all the symptoms. On the other hand, they state, that when the pains were excessive, when there was great anxiety, a profuse general or partial perspiration, the strength much reduced, the respiration hurried and anxious, and the face red, with intense headache, the patient could not support the warm bath, and derived no benefit whatever from it. The hip-bath was found more generally useful, and was employed almost indiscriminately by M. Desormeaux in all the different varieties of the disease. I have now repeatedly tried the warm bath, but without benefit.

Recolin, Dance, and Tonellé, highly recommend the injection of warm water into the vagina and cavity of the uterus, by means of an elastic gum canula. These injections were repeated three or four times in the course of the day, and they not only washed away the putrid matters adhering to the internal surface of the organ, but they appeared to relieve the irritation and inflammation of the organ itself. This practice I have seen followed by good effects, and now generally recommend it. In many cases of uterine inflammation severe irritation of the stomach supervenes in the progress of the disease, and this symptom seems occasionally to be aggravated by anodynes and saline effervescing draughts. A drachm of subcarbonate of potash should be added to five ounces of aquæ menth. virid., and an ounce of this mixture given every two or three hours. The effect of this medicine in allaying the irritability of the stomach has been very remarkable indeed in some cases related to me, but I have often tried it without deriving any advantage from it. Should diarrhœa take place spontaneously, or result from the use of the mercury, it must be moderated by opium. The starch and laudanum clyster is by far the best mode of administering the anodyne.

During the first stage of uterine inflammation, cinchona, camphor, and stimulants, are wholly inapplicable; but when the acute symptoms have been subdued, and the patient is left in a state of great exhaustion, quinine, ammonia, wine, and other stimulants, sometimes produce the happiest effects in rousing the powers of the system. I cannot too strongly urge the necessity of continuing to employ these remedies, and whatever else is judged useful, whilst the slightest hope of recovery can be entertained.

The importance of the prophylactic treatment must be obvious, from all that has now been stated. A puerperal woman ought to be as careful of exposing herself to cold and fatigue for a week after delivery, and committing any imprudence in diet, as an individual who is recovering from an attack of continued fever, or inflammation of some important organ. The administration of acrid cathartics should always be avoided for some days subsequent to delivery. After-pains, if severe, should be relieved by anodynes; and the lochial discharge, when scanty, promoted by warm fomentations and poultices over the hypogastrium, and other suitable means. The greatest care should always be taken during the labour, if an operation is required, to avoid inflicting any injury on the uterus.

LECTURE XLII.

HISTORY OF CRURAL PHLEBITIS.

When inflammation commences in the uterine branches of the internal iliac or hypogastric veins, it sometimes extends into the common, external iliac, and femoral veins, and thus gives rise to the swelling of the lower extremities, and to all the other local and constitutional symptoms of phlegmasia dolens, œdema lacteum, œdème des nouvelles accouchées, depôts laiteux, les infiltrations laiteuses des extrémités inférieures, hysteralgia lactea, or metastasis lactis. In the works of Hippocrates, Rodericus à Castro, and Wiseman, there are obscure notices of this disease. Mauriceau was the first author who pointed out distinctly its most characteristic symptoms. I have seen, he says, several women after being safely delivered, who have had their whole legs and thighs, from the groin to the side of the foot, sometimes on one side, at other times on both, remarkably swollen and œdematous. This accident, he says, often occurs after a sciatic pain caused by a reflux upon the parts of certain humours which ought to be evacuated by the lochia. "Cet accident survient souvent ensuite d'une douleur sciatique causée par un reflux, qui se fait sur ces parties, des humeurs qui devroit être evacuées par les vuidanges, dont le gros nerf de la cuisse s'abreuve quelquefois tellement, qu'il en peut rester à la femme une claudication dans la suite, comme il est arrivée à une de mes tantes, qui quoiqu'elle fut très-bien fait, et fort droite auparavant, est restée tout-à-fait boiteuse d'une jambe depuis trente-huit ans par une semblable accident, ensuit d'une de ses couches." Mauriceau does not state that he ever saw the disease prove fatal, but he knew that it was dangerous when the pain and swelling of the limbs were great, accompanied with fever, difficulty of respiration, and much tension and soreness of the hypogastrium. When the swelling was slight, and unaccompanied by fever, he knew that the affection was without danger, and would soon disappear by the use of diuretics. A far more full and exact description was given of the symptoms of crural phlebitis by Puzos, in two memoirs, entitled, "Sur les Depôts Laiteux, appellés communement Lait Repandu," in 1759. He states that it is a painful and protracted, and sometimes a fatal disease; and that it occurs most frequently about the twelfth day after delivery, though sometimes as late as the sixth week. He also observed that one limb only is at first affected, and that the pain and swelling commence in the groin and superior part of the thigh; and descend along the course of the crural vessels to the ham, and thence along the calf of the leg to the foot. He observed likewise that the disease sometimes attacked the other limb, and that it presented the same appearances as the first affected. The extent of the evil, he remarks, is readily recognised by a painful cord formed by the infiltration of the cellular tissue which accompanies the crural vessels. "Quand le depôt laiteux se fait sur les extremités inférieures

(p. 345), il n'en attaque qu'une à la fois. Souvent le mal guérit d'un coté, pour passer ensuite à l'autre. La douleur et l'enflure commencent toujours dans l'aine, et par le haut de la cuisse : le mal descend ensuite tout le long du cordon des vaisseaux; c'est à dire, qu'il s'étend de haut en bas ; il gagne le jarret, le gras de la jambe, et vient se terminer au pied." At page 350 he says, again, "C'est dans l'aine, et dans la parte supérieure de la cuisse, que le depôt commence à donner des signes de sa presence par la douleur que l'accouchée y ressent, et la douleur suit ordinairement le trajet des gros vaisseaux qui descendent le long de la cuisse ; elle est même plus vive dans tout ce trajet. On reconnoit l'étendue du mal par une espèce de corde douloureuse que forme l'infiltration du tissue cellulaire qui accompagne ces vaisseaux ; et l'enflure se joint presque toujours à la douleur." In the treatment of the disease, which Puzos considered to depend on metastasis of milk, he recommends repeated venesection, cathartics, and sudorifics, and various local applications, as fomentations and embrocations. The daughter-in-law of M. Clement, one of the most distinguished accoucheurs at the time, but an enemy to bloodletting in this disease, was attacked with pain in the thigh on the fifteenth day after a natural labour; violent fever and great swelling of the thigh speedily followed, and she died from the depôt laiteux, as it was called, on the twentieth day after her confinement, and the fifth day of the disease. Puzos admits that this was not the only case he had seen which had terminated fatally, and that copious bloodletting was not an infallible remedy. "J'ai eu le malheur de perdre plus d'une malade malgré toutes les saignées que j'avois pu faire : non que les saignées eussent été contraires; mais elles avoient été insuffisantes pour ces cas las, parceque le mal étoit plus puissant que le remède, et qu'il n'y en avoit pas d'autre."

Levret's description of crural phlebitis (1761), coincides in every respect with that of Puzos, and he refers the disease to the crural vessels in so direct a manner, that it is wonderful some opportunity did not occur to enable him to discover its precise nature. When the disease attacks one side, a swelling more or less considerable, he observes, is felt in the iliac fossa. The cord of crural vessels is also painful through a great part of its course.

In a manuscript copy of Dr. William Hunter's Lectures, taken in 1775, no account is given of the disease ; but from the following note written by Mr. Cruickshanks to Mr. Trye, at the time he was engaged in the publication of his work on the subject, it is evident that Dr. Hunter had seen cases of crural phlebitis, and was convinced that the opinions of Puzos and Levret respecting the nature of the disease had no solid foundation. "They have imputed the swelled leg, which happens after lying-in, to a *depôt de lait*, but it is not ; — to something wrong in the constitution. The patient is first seized with pain in the groin ; the pulse becomes smart, and the part becomes tender; the pain and tenderness get gradually lower down, and the muscles are stiffened into hard bumps, and an œdema frequently succeeds the inflammatory swelling. It is generally called a cold, but it is not. In some it is over in a short time, in others it will last some months; it generally does well." In 1784, Mr. White, of Manchester, published an "Inquiry into the Nature and Cause of the Swelling in one or both of the Lower Extremities, which sometimes happens to Lying-in Women;" and he suggested or adopted the opinion, that the disease depends on obstruction, detention, accumulation of lymph in the limb, or on some other morbid condition of the lymphatic vessels and glands of the affected parts. He considered it to arise from some local accident during labour, and to be a purely local disease. Mr. White saw fourteen cases either during or subsequent to the attack, but as none of them proved fatal, an opportunity was not afforded him to determine the truth of his hypothesis by an examination of the actual condition of the different textures of the affected extremities. An Essay on the Swelling of the Lower Extremities incident to Lying-in Women, was published in 1792, by Mr. Trye, of Gloucester, in which he referred the symptoms to rupture of the lymphatics as they cross the brim of the pelvis under Poupart's ligament. Six cases came under the observation of Mr. Trye, and in all recovery likewise took place. He clearly perceived, although he was unable to explain the fact, that an intimate relation subsists between uterine inflammation or puerperal fever, and the swelled leg of lying-in women. Dr. Ferriar soon after maintained, without furnishing the slightest evidence in support of his opinion, that there is a general inflammatory state of the absorbents in this disease. Dr. Hull, of Manchester, published, in 1800, an essay on crural phlebitis, which he called phlegmasia dolens, in which he showed that it was impossible to account for the phenomena on the supposition that the lymphatics were affected independently of a considerable primary affection of the sanguiferous system of the limb. He considered the proximate cause to consist in an inflammatory affection, producing suddenly a considerable effusion of serum and coagulating lymph, from the exhalants into the cellular membrane of the limb. All the textures, muscles, cellular membrane, lymphatics, nerves, glands, and bloodvessels, he supposed to become affected. The primary seat of the inflammation he believed to be in the muscles, cellular membrane, and inferior surface of the cutis; — but it was a mere supposition. Dr. Hull thus describes the symptoms of the disease: — "It has in many instances attacked women who were recovering from puerperal fever, and in some cases has supervened or succeeded to thoracic inflammation. It not uncommonly begins with coldness and rigors. These are succeeded by heat, thirst, and other symptoms of pyrexia; and then pain, stiffness, and other symptoms of topical inflammation, supervene. Sometimes the local affection is from the first accompanied with, but is not preceded by, febrile symptoms. Upon other occasions the topical affection is neither preceded by puerperal fever nor rigors, &c.; but soon after it has taken place, the pulse becomes frequent, the heat of the body is increased, and the patient is affected with thirst and headache, &c. The pyrexia is very various in degree in different patients, and sometimes assumes an irregular remittent or intermittent type. The complaint generally takes place on one side only at first, and thé part where it commences is various; but it most commonly begins in the lumbar, hypogastric, or inguinal region, on one side; or in the hip or top of the thigh, and corresponding labium pudendi. In this case the patient first perceives a sense of pain, weight, and stiffness, in some of the abovementioned parts, which is increased by every attempt to move the pelvis or lower limb. If the part be carefully examined, it generally is found rather fuller or hotter than natural, and tender to the touch, but not discoloured. The pain increases, always becomes very severe, and in some cases is of the most excruciating kind. It extends along the thigh; and when it has subsisted for some time, longer or shorter in different patients, the top of the thigh and the labium pudendi become greatly swelled, and the pain is then sometimes alleviated, and unaccompanied with a greater sense of distension. The pain next extends down to the knee, and is generally the most severe on the inside and back of the thigh, in the direction of the internal, cutaneous, and crural nerve. When it has continued for some time the whole of the thigh becomes swelled, and the pain is somewhat relieved. The pain then extends down the leg to the foot, and is commonly most severe in the direction of the posterior tibial nerve. After some time the parts last attacked begin to swell, and the pain abates in violence, but is still very considerable, especially on any attempt to move the limb. The extremity being now swelled throughout its whole extent, appears perfectly or nearly uniform; and it is not perceptibly lessened by an horizontal position, like an œdematous limb. It is of the natural colour, or even whiter; is hotter than natural, excessively tense, and exquisitely tender when touched. When pressed by the finger in different parts, it is found to be elastic, little if any impression remaining, and that only for a very short time." After describing the manner in which the constitutional and local symptoms subside, Dr. Hull further observes, that "hitherto the disease has been described as affecting only one of the inferior extremities, and as terminating by resolution, or the effusion of a fluid that is removed by the absorbents; but, unfortunately, it sometimes happens that, after it abates in one limb, the other is attacked in a similar way. It also happens, in some cases, that the swelling is not terminated by resolution; for sometimes a suppuration takes place in one or both legs, and ulcers are formed which are difficult to heal. In a few cases gangrene has supervened. In some instances the patient has been destroyed by the violence of the disease, before either suppuration or gangrene has happened."

It is a very remarkable circumstance in the history of crural phlebitis, that above a century and a half should have elapsed from the time when it was clearly pointed out by Mauriceau, and the seat of the disease distinctly referred, at a later period, to the crural vessels, by Puzos and Levret, before an opportunity was presented or embraced of ascertaining by dissection the precise nature of the disease. There had, indeed, been opportunities to determine the accuracy of the different hypothesis which had been advanced, but these had been neglected; and the seat of the disease in the crural veins, and its commencement in the uterus, were imperfectly understood before the year 1829.

In January, 1823, M. Bouillaud related, in the Archives Générales de Médecine, p. 188, several cases and dissections, in which the crural veins were obliterated in women who had suffered from a swelling of the lower extremities after delivery; and he distinctly stated that he considered obstruction of the veins to be the cause not only of the œdema of the lower extremities in lying-in women, but of many partial dropsies. He has adduced various facts and observations in support of the opinion, that in many cases venous obstruction, and not general debility, is a common cause of dropsy. A woman, æt. 20, was admitted into the Hospital Cochin, on the 19th of July, 1822, affected with tubercles of the lungs, and œdema of both lower extremities. She died in 45 days, and on opening the body a cancerous tumour was found in the pelvis, which involved the uterus, rectum, and the cellular tissue and glands around. The hypogastric and iliac veins, which traversed this enormous mass, were obliterated by an old, red, fibrinous coagulum; the obliteration extended downward along the whole course of the crural veins, and upwards into the vena cava, to the level of the right kidney.

Anne Vilard, æt. 55, entered the same hospital on the 19th of November, 1822. She died 59 days after, from chronic peritonitis, cancer of the ovaria, and an encysted abscess in the left hemisphere of the brain. The two inferior extremities were infiltrated. On examination after death, the crural, external, and common iliac veins, were obliterated, and rendered impervious by the presence of solid fibrinous coagula.

A man, æt. 60, was admitted on the 16th of April, 1822, with pleurisy and chronic peritonitis. The lower extremities were swollen, and the scrotum and trunk of the body soon also became infiltrated. The dropsy of the trunk disappeared, and the abdomen was seen covered with large veins. The patient died in 75 days, and on opening the body the right kidney was found greatly enlarged, and affected with encephaloid cancer. The tumour lay over the vena cava, was filled up with a fibrous, friable, pultaceous matter; the emulgent veins, the veins of the pelvis, and those of the inferior extremities, were equally obliterated by old coagula.

Virginie Aubert, æt. 21, much affected with ataxic, adynamic fever, of three weeks' duration, entered on the 8th of November, 1822. The left lower extremity was at this time infiltrated and painful. She died in nine days, and on examining the body the veins of the swollen limb were found obliterated by a long, solid, red, fibrinous coagulum, which extended into the vena cava. The veins on the opposite side contained fluid blood.

The two following cases are examples of genuine crural phlebitis, or phlegmasia dolens, in puerperal women, and they are the first cases, I believe, that were ever published, in which the crural veins were examined after death. Elizabeth Perfu, æt. 38, was received into the Cochin Hospital on the 27th of April, 1822, two months after her delivery. She had tubercles of the lungs, and infiltration of the left inferior extremity. The body was in a state of great marasmus. The veins of the affected extremity were found after death plugged up with a very old, red-coloured, easily broken down, fibrinous coagulum, which extended into the common iliac vein, where its consistence diminished. The vena cava, and veins of the other extremities, contained more or less fluid blood.

Marguerite Colliere, æt. 30, was delivered by the forceps in the Maternité, about the end of January, 1822. She entered the same hospital on the 20th of March following, having the left lower extremity greatly swollen. She died on the seventh day after. On opening the body, an enormous abscess was found in the pelvis, which appeared to have commenced on the left side of the cavity, before and within the psoas muscle. All the surrounding parts were extensively disorganized, and softened like lard. The veins of the swollen extremity, without excepting the great saphena, were obliterated by a solid, fibrinous, friable coagulum.

"It is known," adds M. Bouillaud, "that infiltration of one or both of the lower extremities is not unfrequently observed in women recently delivered, and that in the bodies of those who die, the crural veins are obliterated; compression and inflammation are the causes to which he attributes this. On sait qu'il n'est pas rare de voir l'infiltration s'emparer de l'un ou des deux membres abdominaux chez les nouvelles accouchées. Eh bien, on trouve sur les cadavres de celles qui succombent, des obliterations des veines crurales. Les 5^e^ et 6^e^ observations que j'ai rapportées en fournissent des exemples. MM. Chaussier, Meckel, Travers, en ont recueilli de semblables."

An Essay on the Proximate Cause of the disease called Phlegmasia Dolens, by Dr. David D. Davis, was read to the Medical and Chirurgical Society, May 6th, 1823, and subsequently published in the 12th volume of the Medico-Chirurgical Transactions. The following is the first case related.

"Caroline Dunn, æt. 21, of a weak constitution, was delivered of a male child on the 7th of February, 1817, after a severe labour of 27 hours' duration. Some loss of blood was sustained both before and after the birth of the child. On account of the latter hemorrhage, the placenta was removed artificially by the introduction of the hand into the uterus. On the following day the pulse was full, and regular, at 90; the tongue was white, but moist, and there was a slight thirst. Pressure upon the abdomen occasioned no pain, but a soreness was felt in the vagina. During the days immediately succeeding, the symptoms were moderate." On the 13th, the case was reported as follows. Slight fever; pulse quick and full; bowels costive; tongue white and dry; labia pudendi inflamed, swelled, and œdematous; some headache; respiration difficult; appetite bad; a copious yellow discharge from the vagina, having the consistence of cream, but without fœtor.

17th. — The report was, better generally; discharge much decreased; inflammation subsided; bowels well relieved; pulse regular at 86; tongue natural in its appearance; thirst still great.

21st. — Much better; sleep good; sat up out of bed for four hours.

22d. — Better still; complained of slight pain, like cramp, as the patient herself expressed it, in the left leg.

26th. — Worse; left leg and thigh much swollen; pain in the inguinal region; skin hot; no signs externally of inflammation; no pitting on pressure; bowels costive; slight cough; respiration difficult; pulse very quick and small; headache.

Feb. 28th to March 2d. — No better; leg pitted on pressure; countenance depressed; languor; giddiness at intervals; pulse 80; freedom from pain; no appetite; bowels twice relieved.

3d. — Total insensibility; limb equally swollen; countenance sunk; pale, and emaciated.

4th. — Died at noon this day. Mr. Lawrence examined the body on the 6th of March, 1817, and gave the following description of the morbid appearances. "The left lower extremity presented an uniform œdematous enlargement, without any external discoloration, from the hip to the foot. This was found on further examination to proceed from the ordinary anasarcous effusion into the cellular substance. The inguinal glands were a little enlarged, as they usually are in a dropsical limb, but pale-coloured, and free from the slightest sign of inflammation. The femoral vein from the ham upwards, the external iliac, and the common iliac veins, as far as the junction of the latter with the corresponding trunk of the right side, were distended and firmly plugged with what appeared externally a coagulum of blood. The femoral portion of the vein, slightly thickened in its coats, and of a deep red colour, was filled with a firm bloody coagulum closely adhering to the sides of the tube, so that it could not be drawn out. As the red colour of the vein might have been caused by the red clot every where in close contact with it, it cannot be deemed a proof of inflammation. The trunk of the profunda was distended in the same way as that of the femoral vein; but the saphena and its branches were empty and healthy. The substance filling the external iliac and common iliac portions of the vein, was like the laminated coagulum of an aneurismal sac; at least with a very slight mixture of red particles. The tube was completely obstructed by this matter, more intimately connected to its surface than in the femoral vein; adhering, indeed, as firmly as the coagulum does to any part of an old aneurismal sac. But in its centre there was a cavity containing about a tea-spoonful of a thick fluid, of the consistence of pus, of a light brownish-red tint, and pultaceous appearance. The uterus, which had contracted to the usual degree at such a distance of time from delivery, its appendages and bloodvessels, and the vagina, were in a perfectly natural state. There was not the least appearance of vascular congestion about the organ, nor the slightest distension of any of its vessels. Its whole substance was on the contrary pale, and the vessels every where contracted and empty. The state of the abdominal cavity and its contents was perfectly natural. That the substance occupying the upper part of the venous trunk, and the fluid in its central cavity, had been deposited there during life from inflammation of the vessel, does not admit of doubt." "I am also," observes Mr. Lawrence, "decidedly of opinion, in consequence of its firmness, and close adhesion to the vein, that the red coagulum in the femoral vein was the result of a similar affection extending along the tube; and that the passage of blood through it in the whole tract submitted to examination must have been completely obstructed before death."

I have examined the preparation of the diseased veins, and there can be no doubt that the appearances here described were produced by inflammation of their lining membrane. If you look at the coloured engraving which accompanies the paper, and observe the thickened state of their coats, and the coagulum adhering to their inner surface, you will entertain no doubt of this. The greater part of the coagulum in the femoral vein is blood; it does not adhere to the lining membrane, but a coagulum similar to that in the common and external iliac is never seen but as the consequence of inflammation. No light is thrown by this dissection on the origin of the disease, and you might be led to infer from the observation of Mr. Lawrence, that the uterus and its appendages, and bloodvessels, were healthy; that the inflammation did not commence in the uterine branches of the hypogastric vein or internal iliac; but it does not appear that the course of this vein was traced to its ramifications in the uterus, and unless the attention had been directed in a particular manner to the internal iliac vein, its morbid state might easily have escaped detection. Dr. Davis has also related the following case.

A lady died suddenly in the midst of apparent health on the 20th of September, 1819, in the sixth week after her second labour. The day after her delivery, she was seized with violent peritoneal inflammation, the acute symptoms of which were subdued by antiphlogistic treatment. The febrile excitement was nevertheless not completely subdued, and ten days after she complained of a deep-seated pain in the groin, and along the tract of the great vessels of the thigh. The limb was observed to be swelled and exquisitely painful. By leeching and blistering, the new inflammation was speedily reduced, and in about a week from its commencement the swelling had entirely subsided, and the patient had recovered the full power of contracting and extending the extremity without suffering pain. From this period she recovered rapidly and satisfactorily. Her death took place instantaneously, whilst in the act of changing the recumbent for the sitting position, soon after dinner, and in a moment of slight excitement. The left external iliac vein, including about half an inch of the upper portion of its corresponding femoral vein, were found strongly attached by adhesions of its cellular coat to the parts around. Its parietes still retained a morbid thickness, and its internal tunic was studded in several places with deposits of adherent lymph. The portion most remarkable for this incrustation, and otherwise most diseased, was the part of the vein immediately under Poupart's ligament. The tube of the vessel was still manifestly pervious, though it had suffered a diminution of capacity amounting to perhaps one-half of its natural diameter. The inguinal glands were also diseased. The right iliac vein was also in a perfectly healthy state. These appearances have also been represented in this coloured engraving, and there can be no doubt that they are the result of inflammation.

A case of fatal phlegmasia dolens, which occurred to Mr. Oldknow, has also been recorded by Dr. Davis as follows. "Jane Elliott was delivered in September, 1820, having an easy and natural labour. Until the 20th day after the delivery she was doing well; on that day she was seized with a violent purging, for which astringents were given with success; but the pulse continued quick, and she had considerable fever; on the 30th day the purging returned, and the left lower extremity became swollen and painful, with considerable increase of fever. She died on the 34th day." On examining the swollen limb the day after her death, "I found the femoral vein," says Mr. Oldknow, "one-third down the thigh, and all the iliac veins much enlarged, and containing adherent layers of coagulated blood, similar to that found in aneurismal sacs, together with a sort of grumous fluid of a brown colour, more or less mixed with air, and almost obliterating the venous canals. The same appearances, but in a much less degree, extended along the vena cava as far as the entrance of the renal veins. The coats of the veins were highly inflamed, and intimately attached to the surrounding parts. The absorbent vessels and glands were slightly enlarged as high as the lumbar regions, but not otherwise affected. The uterus had regained nearly its natural size." The appearances here described have also been represented in this coloured engraving, and there can be no doubt that the veins were inflamed. A fourth case has been related by Dr. Davis. "Mrs. L —, a lady of a delicate constitution, and of a very irritable habit, was delivered of her fifth child on the 2d day of July, 1821. She had been subject to feverish affections in several of her former confinements.

On this occasion she was doing well until the seventh day after her delivery, when she was taken out of bed and placed on a sofa, between the fire and a large loosely hung window. In this situation she was seized with a violent rigor. During the gradual development of the succeeding hot fit she experienced a pain of the left side of the chest, which increased rapidly in intensity. She was freely bled before I saw her, without experiencing adequate relief. She was afterwards bled, leeched, and blistered. The pain of the chest was then in a great measure subdued; but this flattering advantage was not accompanied by any material reduction of the attendant fever. The pulse, on the contrary, continued quick, and the general distress and restlessness were so little mitigated as to call for much sympathy, and to excite serious alarm. In the evening of the same day, unequivocal symptoms of phlegmasia dolens declared themselves. The patient died on the 23d of the month. The pleura costalis on the left side was found inflamed. All the surfaces and viscera of the abdomen were apparently in a perfectly sound state. The left lower extremity, from the hip to the toe, was considerably but not greatly enlarged, and there was an evident fulness of the labia pudendi of the same side. The iliac veins of both sides were unusually turgid with blood; but presenting no other external manifestation of disease. They were entirely free from attachments to the contiguous parts. The inguinal glands were certainly not diseased, nor even visibly enlarged. On making a careful incision into the left internal iliac, it was first found to contain a coagulum of blood of firm consistence; but not at that part adherent to the internal surface of the vein. Upon opening, however, the common iliac portion of the vessel, adhesion of the same column of coagulum had obviously taken place; an appearance which is now distinctly to be seen in the preparation. The left internal iliac was greatly inflamed, and its diameter was so much contracted by the morbid thickening of its parietes, that it was rendered almost impervious. The right iliac vein, including both its common and external portions, was distended with a similar coagulum; or rather the same coagulum was prolonged over the angle of their common junction with the vena cava, from one iliac to the other." These appearances have also been represented in this coloured engraving. From these cases Dr. Davis inferred that the proximate cause of phlegmasia dolens is a violent destructive inflammation of the iliac veins and their contributory branches, including in some cases the inferior portion of the vena cava. "The principal veins of the pelvis are necessarily exposed to great pressure," he says, "from the uterus, during the latter months of gestation. A well-known effect of this pressure is a varicose dilatation of the superficial veins, together with œdema of the lower extremities: a state of the limbs indicative, in the opinion of practical writers, of a predisposition to phlegmasia dolens." "Phlegmasia dolens," he adds, "is a disease which almost always occurs in an excited state of the organs of circulation, and when that is not the case it is known to take place during a period of predisponency to inflammatory action of the great bloodvessels within the pelvis, and their immediate ramifications. Hence its occurrence after labours and miscarriages, before the perfect re-establishment of the balance of the circulation ; and at those times more particularly after profuse hemorrhages, or during phlegmasia of other parts ; or from the application of occasional causes of whatever kind which may have the effect of exciting a febrile disturbance in the system. All the veins liable to much pressure, or to enlargement of diameter, during pregnancy, appear to be more or less predisposed to inflammation upon the sudden removal of those agencies by the consummation of the act of parturition. Hence the predisposition to hysteritis and peritonitis during the first week after labour, and to the swelled leg, and to mammary abscesses, at a more advanced period."

For six years after the publication of these cases by M. Bouillaud and Dr. Davis, there was perhaps no subject on which a greater difference of opinion prevailed than on the pathology of phlegmasia dolens, and many remained in doubt whether these cases should be considered as examples of genuine phlegmasia dolens, or be viewed as essentially different diseases, and analogous in their nature to those formidable attacks of phlebitis which sometimes succeed to venesection and wounds. In opposition to their views, it was forcibly urged, that if phlegmasia dolens depended on inflammation of the iliac and femoral veins, the majority of those affected with the disease would die ; whereas death does not take place in one case in a hundred where that disease is distinctly marked. Even that distinguished anatomist and pathologist, Mr. Lawrence, who had examined the first fatal case which occurred to Dr. Davis, and whose history of the morbid appearances threw more light on the nature of the affection than all the hypotheses that had previously been advanced — which were mere speculations, unsupported by facts — declared in the Medical and Chirurgical Society, as late as 1828, that he was fully convinced, from what had subsequently fallen under his observation, that Dr. Davis's views were incorrect, and that phlegmasia dolens did not arise from inflammation of the iliac and femoral veins.

In the next lecture I shall relate to you the cases, and exhibit the various preparations and drawings, which appear to me to demonstrate, not only that inflammation of the iliac and femoral veins gives rise to all the phenomena of phlegmasia dolens, but that, in puerperal women, it originates in the uterine branches of the hypogastric veins, and subsequently extends from them into the iliac and femoral trunks of the affected side.

LECTURE XLIII.

ON THE ORIGIN, SYMPTOMS, AND TREATMENT OF CRURAL PHLEBITIS.

No unequivocal example of phlegmasia dolens was recorded in the medical literature of this country, where the actual condition of the affected parts was ascertained by dissection, from the year 1823 to 1829, when the history of the following case was published in the fifteenth volume of the Medico-Chirurgical Transactions. Several eminent physicians and surgeons examined the patient during the progress of the affection, who was under the care of Dr. Nathaniel Grant, of Thayer Street, and none of them expressed a doubt as to the disease being genuine phlegmasia dolens. The hard, painful femoral vein in the groin was supposed by some to be an inflamed absorbent vessel, but the dissection proved this opinion to be incorrect.

I. Mrs. Jones, æt. 31; delivered on March 10, 1827. On the 14th she began to experience a sense of pain in the left groin and calf of the leg, with numbness in the whole left inferior extremity, but nothing unusual was perceived in the appearance of the limb, except a slight tumefaction of the inguinal glands, where pressure occasioned great uneasiness. She had rigors; the tongue was furred, and there was much thirst; bowels open; pulse 80; the flow of milk and lochia natural. 16th (the sixth day after parturition), the pain of the left thigh and leg continued with increased severity, particularly from the groin to the knee, along the inner surface of the limb, where a swelling of a glistening white appearance was observed; the pulse still 80; and the general functions but little deranged. 19th. The pain had diminished, but the swelling had greatly increased, and extended to the leg and foot, which were both very tense, and did not pit upon pressure: there was no discoloration of the skin; the pain of the limb was relieved by placing it in a state of moderate flexion. 21st. The pain in the groin had abated, and the swelling appeared to decrease. 24th. Pain of the limb aggravated, particularly on moving it; pulse more accelerated; skin hot and moist; she was extremely irritable and desponding. 25th (the fifteenth day after delivery), when I first saw her, the whole extremity was much swollen, the intumescence being greatest in the ham and calf of the leg. The integuments wore a uniform, smooth, shining appearance, having a cream-like colour, and every where pitting on pressure, but more readily in some situations than in others; the temperature to the touch did not differ from that of the other limb, though she complained of a disagreeable sensation of heat throughout its whole extent, and much pain was experienced in the upper and inner part of the thigh on moving it. Immediately below Poupart's ligament, in the situation of the femoral vein, a thick, hard cord, about the size of the little finger, was distinctly felt. This cord, which rolled under the fingers, and was exquisitely sensible when pressed, could be distinctly traced three or four inches down the thigh in the course of the femoral vessels, and great pain was experienced on pressure as low down as the middle of the thigh, in the same direction. The pulsations of the femoral artery were felt in the usual situation below Poupart's ligament: pressure over this vessel excited little or no uneasiness. Pulse 90, and sharp; tongue much furred; thirst urgent; bowels confined; the lochia had nearly disappeared; leeches were applied to the left groin and upper and inner part of the thigh; these were followed by cold evaporating lotions to the affected parts, and mild cathartics and anodynes were administered internally. 30th. The acute pain on pressure and motion of the limb had subsided, and the extremity was universally œdematous. For two months after this period the limb remained so feeble as to disable her from walking, and continued larger than the other. Eleven months after the attack the general health of the patient was completely restored, and she again became pregnant. Because she recovered perfectly from the attack of phlegmasia dolens, I was not unfrequently afterwards reminded by one of the physicians who had seen her, of the mistake he believed I had committed in supposing that the hard painful cord in the groin was the inflamed femoral vein, and not an inflamed absorbent. On the 5th of November, 1828, she was delivered of a still-born child, and died soon after from uterine hemorrhage. On dissection the whole of the left inferior extremity was considerably larger than the right, but no serous fluid escaped from the incisions made through the integuments, beneath which a thick layer of peculiarly dense granular adipose matter was observed. The common and internal iliac and femoral veins and arteries, inclosed in their sheath, were removed from the body for examination. The common iliac, with its subdivisions, and the upper part of the femoral veins, so resembled a ligamentous cord, that on opening the sheath, the vessel was not, until dissected out, distinguishable from the cellular substance surrounding it. On laying open the middle portion of the vein, a firm thin layer of ash-coloured lymph was found in some places adhering close to and uniting its sides, and in others clogging it up, but distending it. On tracing upwards the obliterated vein, that portion which lies above Poupart's ligament was observed to become gradually smaller, so that, in the situation of the common iliac, it was lost in the surrounding cellular membrane, and no traces of its entrance into the vena cava were discernible. The vena cava itself was in its natural state. The entrance of the internal iliac was completely closed, and in the small portion of it which I had the opportunity of examining, the inner surface was coated with an adventitious membrane. The lower end of the removed vein was permeable, but its coats were much more dense than natural, and the inner surface was lined with a strong membrane, which diminished considerably its calibre, and here and there fine bands of the same membrane ran from one side of the vessel to the other. The outer coat had formed strong adhesions with the artery and the common sheath; the inguinal glands adhered firmly to the veins, but were otherwise in a healthy condition. No appearance of recent disease existed, and the density and firmness of the morbid textures evidently showed that the whole was the result of inflammation, which had occurred at a remote period. An accurate coloured drawing of the appearance was made immediately after the removal of the vessels from the body, which I shall now hand round, with the preparation of the morbid parts, and which I entreat you to examine rigorously. At the period when this occurred I was wholly unacquainted with the important pathological fact, that the inflammation of the iliac and femoral veins in phlegmasia dolens commences in the uterus, and I could obtain no satisfactory explanation of the cause why the disease did not occur during pregnancy, which it must have done had it been owing to pressure of the gravid uterus on the vessels ; and why a certain period should always elapse after delivery before the disease commences. Neither in this nor the following case, which has also been recorded in the fifteenth volume of the Medico-Chirurgical Transactions, were the internal iliac veins examined with a view to discover the commencement of the disease in the uterus, because at this time no suspicion existed that it originated in the uterine veins, and that crural was the result of uterine phlebitis.

II. Mrs. Edwards, æt. 35, No. 54, King Street : 16th of April, 1829. Was delivered of her second child, three weeks ago, after a natural labour, and on the 6th inst. was attacked suddenly with a pain in the calf of the right leg, and loss of power in the whole right inferior extremity. On the 13th, a considerable swelling, without discoloration, had taken place from the ham to the foot, and great tenderness was experienced along the inner surface of the thigh to the groin. The extremity is now universally swollen, painful and deprived of all power of motion. The temperature along the inner surface of the limb is increased ; the integuments are pale and glistening, and do not pit upon pressure. There is no pain in the hypogastrium, but pressure along the course of the crural vessels excites great suffering, and the vein from the groin to the middle of the thigh is indurated, enlarged, and exquisitely sensible. There is also great sensibility in the ham, and along the inner surface of the leg to the ankle, where some branches of the superficial veins are hard and painful on pressure. Pulse 80 ; tongue much loaded ; thirst ; bowels open. There was no rigor, or symptom of pyrexia, at the invasion of the disease. She states that the veins of the right extremity were more distended during pregnancy than those of the left. Twelve years ago, after the birth of her first child, the patient and her relatives report that she experienced an attack similar to the present, in the same limb, and that it remained in a weak condition for several months afterwards, but ultimately recovered its natural size and power. April 18th. — The tension and increased heat along the inner surface of the limb are somewhat diminished, but the pain continues in the course of the vessels. May 1st. — Affection declining. The femoral vein cannot be felt, but there is still a sense of tenderness in its course down the thigh. No pitting on pressure. She has suffered, during three or four days, considerable uneasiness between the umbilicus and pubes, as well as in the loins, and has had rigors, and quick pulse, loaded tongue, and thirst. The abdomen is soft, but tender on pressure around the umbilicus. 9th. — The swelling of the limb is nearly gone, as is the tenderness in the course of the femoral vessels. For several days past she has experienced attacks of acute pain in the umbilical region, loins, and back, which have assumed a regular intermittent form. Every afternoon there has been a violent rigor, of an hour's duration, followed by increased heat and profuse perspiration. In the course of the last and preceding nights, there was slight delirium. The skin is now hot and dry; the pulse 125; the tongue brown and parched; bowels open. The abdomen is neither tense nor swollen. On pressing around the umbilicus, she complains of a deep-seated feeling of soreness. A strong vibratory motion, corresponding with the pulsations of the heart, is perceived in the epigastrium. 21st. — The febrile attacks gradually declined in severity, and she appeared to recover, until yesterday, when she had a long and violent fit of cold shivering. The countenance is now expressive of great anxiety, and the pulse extremely quick and feeble. There remains no visible trace of the affection of the lower extremity. 23d. — Has been vomiting ever since yesterday, at intervals of half an hour. Complains of great pain in the left side, increased upon taking a deep inspiration. The pulsation in the epigastrium diminished, although it is still clearly perceived: pulse 120, and soft.

24th. — Symptoms continue without alleviation. Has had a severe shivering fit of long duration. Skin hot and dry; pulse 140; tongue brown and parched; diarrhœa. The pulsation in the epigastrium has entirely disappeared; the pain in the left side of the thorax is diminished, but the respiration is hurried, and there is frequent cough. Great prostration of strength. Surface of the body has assumed a peculiar sallow tinge. She has been delirious in the night, but is now perfectly conscious when roused. The conjunctiva of the right eye has suddenly become of a deep red colour, and so much swollen, that the eyelids cannot be closed. The cornea is dull, she makes little complaint of pain in the eye, and there is no intolerance of light. The vomiting has ceased. 25th. — Has again had repeated attacks of vomiting. Debility rapidly increasing; respiration hurried; incessant hacking cough; pulse 140, extremely feeble; surface of the body cold and clammy; the tongue and teeth covered with dark sordes; diarrhœa. The left eye has also become red and swollen, without much increased sensibility. 26th. — Great debility; when undisturbed she is delirious, but is conscious when roused, and complains of pain in the left side of the chest. Pulse above 140. Tongue black and dry. Conjunctiva of the left eye also affected with swelling and intense redness. The cornea is dull, and shreds of lymph appear to have been effused over the left iris. 28th. — Had so violent a rigor in the afternoon that the bed shook under her. She is now completely insensible. The eyes are red and swollen, and there is a copious secretion of an opaque fluid from their surface and from the eyelids, which cannot be closed. The respiration hurried. Pulse 140. 31st. — Has recovered her consciousness, and drunk cider and porter with great eagerness. Pulse rapid and feeble. Eyes so much swollen that they seemed pushed forward from their orbits. Vision entirely lost; but hearing and the other senses remain. 2d June. — Great debility. A red puffy swelling had suddenly appeared over the right elbow-joint. Tongue dry and black; diarrhœa; frequent, or rather constant wandering, except when spoken to, when she answers questions distinctly, and complains only of pain in the chest, with difficult respiration and cough. 10th. — Little change has taken place in the symptoms; but she has become much weaker. The vision is lost, but the hearing is perfect, and she makes no complaint of pain in any part of the body. 15th June. — Died this morning.

Morbid appearances on examining the body of Sarah Edwards on the 16*th of June.* — Present, Drs. Sims and Locock.

Thorax. — In its left cavity were contained upwards of two pints of a thin purulent fluid, and extensive recent adhesions existed between the pleura covering the lower margin of the superior lobe and the pleura costalis. The surface of the inferior lobe was coated with a thick layer of flocculent coagulated lymph, as was a corresponding part of the pleura costalis. The substance of this lobe was of a dark colour, approaching to black, and soft in texture, so as to be readily broken down with the fingers. In its centre about an ounce of thick cream-coloured pus was found deposited in a dark-coloured and softened lung. This was not contained in any cyst or membrane, but infiltrated into the pulmonary tissue.

In the right cavity of the chest recent adhesions also existed at the inferior part. A considerable portion of the right inferior lobe was entirely changed from the healthy structure, being converted into a dense, solid, dark red coloured mass. On the anterior surface of this lobe the pleura was elevated as if by a hard irregular tumour; but when cut into, no pus escaped from this part, and it presented only the appearance of the surrounding portions of lung, with a greater degree of condensation. *Vena cava inferior:* Coats of the vessel considerably thickened, and the internal were visible, of a scarlet colour; its whole cavity occupied by a coagulum, distending it to its utmost extent, and terminating in a loose, pointed extremity about an inch below the entrance of the vena cava hepatica. The coagulum, covered with a membranous-like investiture of a bright red colour, throughout firmly, and in many places inseparably adherent to the inner lining of the vein. The substance within it varied in consistence and colour: in some parts it presented the appearance of coagulable lymph; in others it was a pultaceous, dull yellow mass, made up apparently of pus and lymph blended together. The exterior of the firmer portions were separated into layers which gradually disappeared as they approached the centre. The mouths of all the veins emptying themselves into the cava were sealed up, the emulgents excepted, the coagulum near the entrance of these vessels hanging loosely within the cava. *Left common iliac and its branches:* Its interior plugged up with a continuation of the coagulum from the cava, and differing in no respect from it either as to consistence, colour, or the firmness of its adhesions to the inner tunic of the vein; it was continued beyond the entrance of the internal iliac (which it completely closed), and terminated in a pointed extremity about the middle of the external iliac; neither the remainder of this vessel nor the femoral vein exhibited any morbid changes. The internal iliac was much contracted, and lined with a thick adventitious membrane. *Right common iliac and its branches:* This vessel was contracted to more than one-half its natural size: it was firm to the touch, and of a greyish-blue colour; to its internal coat adhered an adventitious membrane of the same colour, containing within it a firm coagulum, made up of thin layers of dense lymph. The internal iliac was rendered quite impervious by dense, dark-coloured, bluish membranes, and, at its entrance into the common iliac, was converted into a solid cord. The contracted external iliac contained within it a soft, yellowish coagulum, similar to the one in the cava; its coats were three or four times their natural thickness, and lined with dark-coloured, membranous layers. The *femoral vein*, from Poupart's ligament to the middle of the thigh, was diminished in size, and almost inseparable from the artery. Its tunics were thickened, and its interior coated with a dense membrane surrounding a solid purple coagulum strongly adherent to it. The superficial and deep femoral veins were in a similar condition, and the saphena major and minor differed from the femoral veins only in the size of the coagulum they contained, which was slender, and had formed no adhesions with the layers of lymph lining their cavity. The cellular membrane and other textures of the limb were in a perfectly healthy condition, and in size and appearance there was externally no visible difference between the two extremities. The morbid alterations of structure now described can still be distinctly seen in the preparation of the diseased veins, and have been represented with great accuracy in this beautiful drawing, made by Mr. Perry, from the parts immediately after their removal from the body. These I shall likewise hand round, that you may have an opportunity of comparing them with this description, and verifying its accuracy.

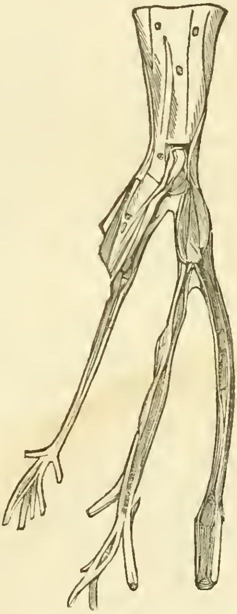
In this case, the connection between inflammation of the vena cava and of the iliac and femoral veins, and the destructive inflammation of the eyes, in puerperal women, was so obvious, that it could not be overlooked, and, I supposed, had long been admitted as an undoubted fact. In the article Puerperal Fevers, by Dr. Locock, published in the first volume of Dr. Tweedie's System of Practical Medicine (1840), p. 361, there is the following statement: — "The remarkable destructive inflammation of the eye, which has already been mentioned, rare as it is, can hardly, perhaps, be placed as a symptom peculiar to this form of puerperal fever, but we have witnessed four instances of it, and in each there were purulent deposits in various parts of the body. In the five cases related by Dr. Marshall Hall, which also occurred after delivery, the same fact is noticed; there is the same rapid pulse, with constitutional disturbance, lasting for many days before the inflammation of the eye was discovered. In Dr Hall's cases the left eye was uniformly the one inflamed, and it is curious that such was the fact in the four which have come under our own knowledge. In only one of Dr. Hall's cases was any decided abdominal pain and tenderness noticed, whereas three out of the four of our cases had such symptoms. In none could any post-mortem inspection be obtained. Dr. Robert Lee (Cyc. Pract. Med.: art. Puerperal Fever) has alluded to two cases under his care, where this destructive inflammation of the eye occurred in both eyes. He is inclined to believe that this remarkable affection is the attendant upon 'the morbid condition of the veins of the uterus,' the purulent or other depraved secretions entering the system, and acting as a poison on the whole mass of blood. In Dr. Hall's cases and our own no examination took place to elucidate this theory, and *Dr. Lee does not quote any dissections to confirm it.*"

The following statement, contained in the same article, is so completely at variance with all my experience respecting uterine inflammation in puerperal women, that it would have been much more satisfactory had Dr. Locock mentioned where and when the cases occurred, and by whom the most careful but unsuccessful search was made for morbid alterations of structure in the veins, the absorbents, the muscular structure, and the lining membrane of the uterus, and of the adjacent parts. "In Gooch's Treatise on Peritoneal Fevers, already quoted, several cases are recorded in which death ensued after certain symptoms, and in which no morbid appearances were discovered on dissection. Dr. Lee would reply to this, that the examination was not pushed far enough, and that a more close inspection must have discovered some of the changes he has described. But after Dr. Lee's researches into these subjects were known, several cases similar to those related by Gooch occurring in our own practice, and in that of others, convinced us that in these something might therefore be found. The most careful search was made for morbid alterations of structure in the veins, the absorbents, the muscular structure, and the lining membrane of the uterus and of the adjacent parts, and nothing could be found to explain the cause of death."

III. Mrs. Foster, æt. 25, No. 27, Little Windmill Street, out-patient of the British Lying-in Hospital. May 8, 1829. Previous to her confinement, six weeks ago, she had been affected for several months with pain in the chest, difficulty of respiration, cough, with copious expectoration of a matter tinged with blood, profuse perspirations in the night, and had become greatly emaciated. During the last fourteen days she has been suffering from attacks of pain in the bowels, and diarrhœa. On the 4th instant she experienced a sense of soreness in the left groin, which gradually extended along the inner surface of the thigh to the ham, and from thence along the posterior surface of the leg to the foot. She stated, that for two or three days before the occurrence of pain in the groin she had felt great uneasiness in the region of the uterus, that this suddenly quitted the hypogastrium and passed into the groin, and that from thence it extended downward along the inner surface of the thigh and leg. The limb became swollen twenty-four hours after the invasion of the pain. The whole left inferior extremity is now affected with a hot, painful, colourless swelling, no where pitting on pressure except over the foot. The thigh is double the size of the other, and any attempt to move the limb produces excruciating pain along the inner surface of the thigh; and the pain excited by pressure along the tract of the femoral vein is so acute that the condition of this vessel cannot be ascertained. Several branches of the saphena major above the knee are distended and hard; pulse 120; respiration quick and laborious; tongue peculiarly red and glossy; diarrhœa continues.

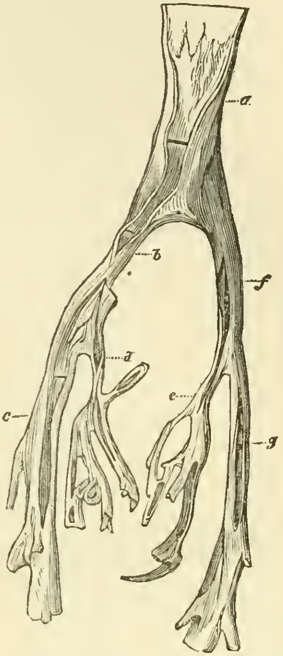
10th. Pulmonary affection aggravated. The limb continues extremely painful, and is still more swollen. The groin is so tender that she cannot endure the slightest pressure over it. The same is the case with the inner surface of the thigh. The branches of the saphena vein are still hard and painful. 11th. — The femoral vein, under Poupart's ligament, can now be felt indurated and enlarged, and it is exquisitely painful when pressed, as is the inner surface of the thigh, the ham, and the calf of the leg. There is comparatively little tenderness along the outer surface of the limb; pulse 120; skin hot. 17th. — Diarrhœa, emaciation, colliquative sweats, and difficulty of respiration, increasing. The left inferior extremity is still much swollen, but there is much less pain at the groin and in the course of the femoral vessels. The foot and ankle pit on pressure. 26th. Calf of the leg still swollen and painful. June 19th. The pulmonary affection aggravated, and she is now reduced to a state of extreme debility. The limb is still considerably swollen, and is universally œdematous. 24th. Died this morning from the disease of the chest. *Dissection:* present Dr. Sims and Mr. Prout. *Thorax:* Extensive adhesions between the pleuræ on both sides. Scarcely a portion of lung could be observed which did not contain tubercles in various stages of their growth. The right and left superior lobes contained several large tuberculous excavations. The vena cava and right common external iliac veins were in a sound state. The left common external and internal iliac veins were all impervious, and had undergone various alterations of structure. The common iliac, at its termination, was reduced to a slender tube, about a line in diameter, which was lined with a bluish, slate-coloured, adventitious membrane. The remainder of the common and the external iliac veins were coated also with a dark-coloured membrane, and their centre filled with a brownish, ochrey-coloured, tenacious substance, rather more consistent than the crassamentum of the blood. The left hypogastric or internal iliac vein was in the same condition, but in some places reduced to a cord-like substance, and its cavity throughout completely obliterated. The branches of this vein taking their origin in the uterus, and usually termed the uterine plexus, were found completely plugged up with firm, reddish coagula of lymph. From the commencement of the branches of this plexus of the hypogastric vein to the termination of this vein in the iliac, the whole had become thickened, contracted, and plugged up with coagula and adventitious membranes of a dark blue colour. The same changes had taken place in the uterine plexus and trunk of the right hypogastric vein, from the uterus to its unusual termination in the left common iliac vein. The coats of the left femoral vein were thickened, and closely adherent to the artery and surrounding cellular substance; its whole interior lined with an adventitious membrane, and distended with a reddish-coloured coagulum. The same morbid changes presented themselves in the deep and superficial branches as far as they were examined down the thigh. If you examine this drawing made of the parts by Mr. Perry, immediately after their removal from the body, and this preparation of them, you will require no further evidence to convince you that inflammation of the left iliac and femoral veins, which produced phlegmasia dolens in the left lower extremity, commenced in the uterine branches of the hypogastric vein. The following case, which has likewise been published in vol. xv. of the Medico-Chirurgical Transactions, with a coloured engraving, demonstrates this fact in the most conclusive manner.

Fig. 66.



IV. Mrs. Mason, æt. 42, No. 3, Little Vine Street, August 29th, 1829, four weeks ago, was delivered of twins, and before the expulsion of the placenta had nearly perished from uterine hemorrhage. Considerable tenderness of the uterus succeeded, and remained until the 27th instant, when, without any apparent cause, she had a violent fit of cold shivering, followed by febrile symptoms, and pain in the right iliac region and groin. Yesterday morning the pain increased in severity, and extended down the inner surface of the thigh towards the ham, and in the evening the whole thigh and leg was perceived to be considerably swollen. At present the whole right inferior extremity is affected with a general intumescence, and is completely deprived of all power of motion. The temperature of the limb, particularly along the inner surface, is much higher than that of the other, but the integuments retain their natural colour, and do not pit on pressure. The femoral vein, for several inches under Poupart's ligament, is very distinctly felt enlarged, and is very painful when pressed. Out of the course of the crural vessels little uneasiness is produced by pressure. In the right side of the hypogastrium there is also great tenderness; pulse 120; tongue furred. She appears pale and depressed, and complains of deep-seated acute pain in the lower part of the spine when she attempts to move. August 31st. The pain continues in the groin and along the inner surface of the thigh. The glands in the groin are painful and tumid. The limb is considerably swollen, and the temperature is increased. Febrile symptoms continue. Sept. 8th. There is less pain in the limb, but the femoral vein can still be felt large and hard, and is painful on pressure. The foot and leg pit. She has suffered much from rigors, and has had repeated attacks of diarrhœa; pulse quick, with great prostration of strength. 14th. The limb is now œdematous, and nearly free from pain. She has complained of tenderness in the left groin and thigh, but no thing unusual can be perceived in the seat of the pain. During the last four days she has had repeated attacks of cold shivering, and has suffered severely from diarrhœa, and deep-seated pain in the lower part of the back; pulse 130, and feeble; tongue white. From the 13th to the 22d, when she died, she was occasionally delirious, and made no complaint of pain except in the back; pulse 140; tongue dry and furred. Frequent attacks of diarrhœa and severe rigors. Both inferior extremities were œdematous. *Dissection:* present Mr. Prout. The veins presented nearly similar appearances to those observed in the preceding cases, and the drawing and preparation will convey a more correct idea of the changes they had undergone, than any verbal description. The divisions of the vena cava were in this instance both affected. On the side, the cavities of the iliac and femoral veins were filled with a dark purple coagulum, their coats being not much thicker than natural; 'whilst, on the right side, the coats of these veins were dense and ligamentous, and the cavities blocked up by adventitious membranes, or lymph of a dull yellow colour. The lower part of the vena cava, for the space of two inches, as well as the right common iliac, was obstructed by a tough membrane of lymph surrounding a soft, semifluid, yellowish matter. The right, common, external, and internal veins were imbedded in a mass of suppurating glands, the purulent fluid of which had escaped into the adjacent cellular membrane, and forced its way downwards in the course of the psoas muscle, as low as Poupart's ligament. The right hypogastric vein was reduced to a small impervious cord, and its membranes distended with coagula of lymph of a bright red colour. The right femoral and its branches were in like manner impervious, their coats being greatly thickened, and their interior occupied by coagula. The cavities of the left common external iliac and hypogastric veins contained soft coagula, disposed in layers, which adhered to the inner tunic of the vessel. The trunk of the left hypogastric vein was contracted, its coats somewhat thickened, as well as its branches filled with red-coloured, worm-like coagula. The spermatic veins were healthy. The lower extremities were both infiltrated with serum.

Fig. 67.



V. A lady, 26 years of age, was delivered on the 19th of June, 1831. The labour was protracted, and the placenta, after having been retained six hours, was removed artificially by the practitioner with some difficulty. In the course of a few days after, great tenderness of the uterus, with pyrexia, followed. The pain subsided after the application of leeches to the hypogastrium, but the fever, with remarkable prostration of strength, continued till the end of the third week. A painful sense of tension then came to be experienced in the brim of the pelvis, on the left side, and in a few days the whole left inferior extremity became affected with a hot, tense, painful, and colourless swelling. On the 21st of July (four weeks after delivery), I was requested by Mr. Cleland, her medical attendant, to see this lady in consultation with him. The pulse was 150, and feeble; there was constant nausea, vomiting, and diarrhœa; tongue of a dark brown hue; great debility; the countenance and whole surface of the body of a dusky colour; respiration hurried, with frequent cough, and expectoration; occasional delirium; the whole left inferior extremity was swollen to more than double the size of the other; the femoral vein, exquisitely painful on pressure, was felt indurated and enlarged in the upper part of the thigh, and there was fulness and tension above Poupart's ligament, in the situation of the iliac veins; the foot and ankle pitted upon pressure, but the integuments of the thigh were hot and tense, and did not retain the impression of the finger. 22d. Great prostration of strength; pulse 160; respiration laborious; tongue dry and brown; diarrhœa and vomiting continue; is conscious at intervals, and then complains of great pain along the inner part of the left thigh and in the ham; there is also tenderness in the hypogastrium, and sense of throbbing in the direction of the abdominal aorta; abdomen tympanitic. 23d. Sinking; cold extremities; pulse feeble and intermittent; singultus. 24th. Died. *Inspection:* present Dr. Sims and Mr. Cleland. The uterus had sunk down into the pelvis, and was as much reduced in size as it usually is four weeks after delivery. The peritoneum at first sight appeared every where healthy, but, upon closer inspection, an adhesion, by means of false membrane, was found to exist between the posterior part of the uterus and rectum. More than a pint of purulent fluid was contained between the uterus and rectum. The peritoneal and muscular coats of the fundus and body of the uterus were so soft as to be readily torn with the fingers, and of an inky-black colour. The coats of the common external iliac and femoral veins, to the middle of the thigh, were all thickened, and their cavity filled with soft coagula of lymph and pus. The vena cava, to about two inches below the entrance of the hepatic veins, was completely blocked up with a coagulum of lymph, which partially adhered to the inner surface of the vessel. Several glands in the vicinity of the vena cava and iliac veins were all in a healthy state. You may hand round the preparation of the parts, in which all these appearances are still seen.

VI. Mrs. Wildman, 30 years of age, was delivered after a natural labour, in the British Lying-in Hospital, on the 27th of January, 1832. Obscure febrile symptoms took place a few days after delivery; but as there was no pain in the region of the uterus, and the patient would not admit that she was indisposed, I was not called to see her till the tenth day after her confinement: I was then informed that she had been incoherent in the night, and that she had suffered from a long and severe fit of cold shivering. The pulse was 130, and feeble; tongue of a dark glossy red colour; lips parched; tremors of the muscles of the face and extremities; the countenance of a dusky yellow colour. There was no tension, pain, or swelling of the hypogastrium; but there was exquisite pain on pressure along the course of the iliac vessels, on the left side, and down the inner part of the thigh. I now, for the first time, discovered that the whole left lower extremity was much swollen, hot, tense, and shining. 18th. The swelling of the left lower extremity, and pain in the course of the iliac and femoral veins, relieved by leeches and warm fomentations. Pulse 140, and extremely feeble; tongue dry and brown; but there is no vomiting, diarrhœa, or distension of abdomen. The conjunctiva of both eyes have suddenly become intensely red and swollen, and the vision is much impaired, if not lost; consciousness remains. The right knee-joint is now exquisitely painful when moved, but it is neither red nor swollen. A dark-coloured, gangrenous spot has appeared over the sacrum. 14th. Eyes red, and enormously swollen; eyelids cannot be closed; pulse rapid and feeble; tongue, lips, and teeth, covered with sordes; severe pain in the right knee and elbow-joints, and right wrist; left lower extremity less swollen. Died on the 18th. The body was inspected, at my desire, by the late Dr. John Prout, who had been present with me at the examination of all the preceding cases. The uterus had subsided into the pelvis, and no trace of disease was perceptible in the sac of the peritoneum. Both spermatic veins were healthy. The coats of the left common external iliac, and femoral veins, deep and superficial, were all thickened, and their cavities plugged up with firm coagula; the same was the case with the epigastric veins and circumflexa ilii. The glands in the vicinity of these veins were enlarged, red, and vascular, and closely adherent to the cellular membrane and outer surface of the vessels. The vena cava, to a short distance above the entrance of the left common iliac vein, had its coats thickened, and a soft coagulum of lymph adhering to its inner surface. The uterine, vaginal, gluteal, and most of the other veins which form the left internal iliac, were gorged with pus, and lined with false membrane of a dark colour approaching to black. The uterine branches of the right internal iliac vein were also filled with pus and lymph; but the inflammation had not extended beyond the entrance of the trunk of the vessel into the common iliac, and the right common external iliac, and femoral veins were all in a healthy condition. In the muscular tissue of the cervix uteri, on the left side, was a cavity which contained three drachms of purulent fluid. The veins proceeding from this part of the cervix were filled with pus, and a large portion of the inner and muscular coats of the uterus was as soft as lard. The conjunctivæ, which before death had been red and swollen, were now almost colourless, scarcely a vessel containing red blood being discernible.

VII. Mary Gane, æt. 20, was delivered on the 21st October, 1832, of her first child, at her residence near St. Thomas's Hospital. The labour was natural, and she went on favourably till the third day, when she complained of pain and stiffness about the hypogastric and inguinal regions, extending down the thighs, with pyrexia and headache. 25th. Increased, pain on pressure over the region of the uterus, extending down the right thigh; pulse frequent; rigors; offensive lochia. 30th. Rigors have been more frequent and severe, with great febrile disturbance. The pain of the uterus has never entirely gone off, and she now suffers severely from pain in the symphysis pubis. 31st. Pain of the uterus diminished, but increased tenderness in the right groin, extending in the course of the femoral vessels, which are felt hard and cord-like, beneath Poupart's ligament, for a space of three inches down the thigh. The limb greatly swollen and œdematous, and free from discoloration, except below the ham, where it is of a dark hue from distension of the saphena veins. November 1st. The limb is immensely swollen, but the femoral vein can no longer be felt in the upper part of the thigh; pitting upon pressure in different parts of the extremity; pulse rapid and feeble; tongue foul; diarrhœa; surface covered with perspiration; countenance pale and depressed. 4th. Pulse 130, and feeble; tongue loaded; diarrhœa continues; pain in the uterine region gone. 13th. Pain and swelling have taken place in the course of the left saphena vein; swelling of right lower extremity diminished; pulse 130, and feeble; distressing diarrhœa. The soft parts covering the sacrum have become affected with gangrenous inflammation, and also the right outer ankle and foot, from which there is a dark ichorous discharge. Several large dark-coloured vesicles have also appeared over the limb. Delirium and pain of the chest ensued, and she speedily sunk. On examination of the pelvis it was found filled with purulent fluid, which had escaped through the symphysis pubis, which was separated to the distance of an inch and a half, and its cartilages gone. The right femoral vein was plugged up with fibrin, and the saphena major filled with pus. Permission could not be obtained to examine the left lower extremity, to ascertain the condition of the internal iliac vein, though there could be little doubt that the inflammation commenced in the uterine branches of this vessel.

VIII. The preparation which I shall next show you exhibits in a very striking manner the effects produced by inflammation on the lower part of the vena cava, and on the left common, external, and internal iliac, and femoral veins. A woman became pregnant who had distortion of the pelvis, and this large fibrous tumour imbedded in the walls of the uterus which you now see. Premature labour came on, and the child was expelled without artificial assistance, but in a short time uterine and crural phlebitis took place on the left side, and she ultimately died. The fibrous tumour was partially in a softened state, and all the branches of the left hypogastric vein were filled with pus and coagula of blood. It is impossible to examine this beautiful specimen of crural phlebitis without being convinced that the inflammation did not commence in the common or external iliac, but in the branches of the left hypogastric vein.

IX. In the third lecture, the uterus, with all the veins connected with it, were exhibited in the recent state, which had been removed from the body of a woman who died on the 9th of October, 1842, four weeks after delivery, and who had phlegmasia dolens in both lower extremities, the left having been first and most severely affected. The symptoms were those which characterise uterine and crural phlebitis, and you saw all the veins of the cervix uteri in the left side filled with lymph and pus, and coated with false membranes. The left internal, common external iliac, and femoral veins, were all in the same condition. The vena cava was thickened as high as the diaphragm, and a rough false membrane adhered to the whole of its inner surface. The right common, external, and internal iliac, femoral, and saphena veins, were all inflamed, though in a slighter degree than on the left side. There was a quantity of serous fluid in the cellular membrane of the limb, but no disease of the absorbents could be discovered. This dissection demonstrates in the most conclusive manner that in this case of phlegmasia dolens, as in all the preceding cases, the inflammation commenced in the uterine branches of the hypogastric veins, and subsequently extended from them into the iliac and femoral trunks of the affected side.

Many authors have confounded diffuse cellular inflammation with crural phlebitis, and have in consequence been led to deny that inflammation and obstruction of the crural veins is invariably the cause of phlegmasia dolens. "Drs. Otto, Duncan, and Craigie," observes Dr. Copland, "refer phlegmasia dolens to diffuse inflammation of the cellular substance, but I think on insufficient evidence. If this tissue be really inflamed in that disease, other structures participate, and it certainly is not the part first affected. In the cases which I have seen examined after death, only three in all, the nerves and veins were the parts to which the symptoms of disorder were first referred, the veins being obstructed in all the cases." Cases of diffuse cellular inflammation of the thigh in puerperal women, which had extended from the peritoneum of the uterus, have most erroneously been represented by some as genuine cases of phlegmasia dolens, though none of the pathognomonic symptoms of the disease were present; where the pain and swelling were in fact on the outside of the thigh, and not in the course of the femoral vessels. It has also been asserted "that phlegmasia dolens has manifested itself to a very considerable extent in some cases without any inflammation of the veins whatever;" but when and where such cases happened no information is given, and in opposition to this I will affirm that no such cases have been recorded during the last sixteen years in the medical writings of this country. I believe no example of genuine phlegmasia dolens has occurred in England during this period, in which the iliac and femoral veins were not affected before the cellular membrane, lymphatics, and nerves, and other textures of the limb.

In a work on the Pathology and Treatment of some of the most Important Diseases of Women (1833), cases and dissections are related by me, which prove that crural phlebitis is not peculiar to women who have been recently delivered, but that it may also arise from suppressed menstruation, malignant ulceration of the os and cervix uteri, polypus of the uterus, and other organic diseases of the uterine organs. Cases are also related in which crural phlebitis occurred in the male sex, and where the disease commenced either in the hemorrhoidal, vesical, or in some of the other branches of the internal iliac veins, in consequence of inflammation or organic changes of structure in one or more of the pelvic viscera, — or in the superficial veins of the legs, which extended upwards and involved the great venous trunks of the thighs and pelvis. The following is a description of puerperal crural phlebitis, which was then given, and the accuracy of which subsequent observation has confirmed. In seven of the twenty-two cases which I have observed, the disease has commenced between the fourth and twelfth days after delivery, and in the remaining fifteen it appeared subsequent to the end of the second week after parturition. In most of the patients there was either an attack of uterine inflammation in the interval between delivery and the commencement of the swelling in the lower extremity, or there were certain symptoms present which I have before described as characteristic of venous inflammation, viz., rigors, headache, prostration of strength, a small rapid pulse, nausea, loaded tongue, and thirst. The sense of pain at first experienced in the uterine region has afterwards been chiefly felt along the brim of the pelvis, in the direction of the iliac veins, and has been succeeded by tension and swelling of the part. After an interval of one or more days the painful tumefaction at the iliac and inguinal regions has extended along the course of the crural vessels, under Poupart's ligament, to the upper part of the thigh, and has descended from thence in the direction of the great bloodvessels to the ham. Pressure along the course of the iliac and femoral vessels has never failed to aggravate the pain, and in no other part of the limb has pressure produced much uneasiness. There has generally been a sensible fulness perceptible above Poupart's ligament, before any tenderness has been experienced along the course of the femoral vessels; and in every case at the commencement of the attack I have been able to trace the femoral vein proceeding down the thigh like a hard cord, which rolled under the fingers. A considerable swelling of the limb, commencing in the thigh and gradually descending to the ham, has generally taken place in the course of two or three days, and in some cases immediately after the pain has been experienced in the groin. In other cases the swelling has been first observed in the ham or calf of the leg, and has spread from these parts upward and downward, until the whole extremity has become greatly enlarged. The integuments have then become tense, elastic, hot, and shining, and, in most cases, where the swelling has taken place rapidly, there has been no pitting upon pressure, or discoloration of the skin. In several well-marked cases, however, of crural phlebitis, at the invasion of the disease, the impression of the finger has remained in different parts of the limb, more particularly along the tibia; but, as the intumescence has increased, the pitting on pressure has disappeared, until the acute stage of the complaint has passed away. At the onset of the disease I have also observed, in several cases, a diffuse erythematous redness of the integuments along the inner part of the thigh and leg. In one individual only has suppuration of the glands taken place in the vicinity of the femoral vein; but in several, by an extension of the inflammation, the inguinal glands have become indurated and enlarged. In some women the inflammation of the femoral vein has appeared to be suddenly arrested at the part where the trunk of the saphena enters it, and the inflammation has extended along the superficial veins to the leg and foot. The swelling and pain in these instances have been greatest along the inner surface of the thigh in the course of the saphena veins. In most cases of crural phlebitis, not only the whole lower extremity, but the nates and vulva, have been affected with a hot, colourless, and painful swelling, which has not retained the impression of the finger. The power of moving or extending the leg has been lost after the disease has been completely formed, and the greatest degree of freedom from pain has been experienced by the patients, in the horizontal posture, with the limb slightly flexed at the knee and hip-joints. The severity of the pain and the febrile symptoms has usually diminished in a few days after the occurrence of the swelling; but this has not invariably happened, and I have seen some individuals suffer from excruciating pain, and violent febrile disturbance, for many weeks, or through the whole period of the acute stage of the disease. The duration of the acute local symptoms has been very various in different cases. In the greater number they have subsided in two or three weeks, and sometimes earlier, and the limb has then been left in a powerless and œdematous state. The swelling of the thigh has first disappeared, and the leg and foot have more slowly resumed their natural form. In one case, after the swelling had subsided several months, large clusters of dilated superficial veins were seen proceeding from the foot, along the leg and thigh, to the trunk, and numerous veins as large as a finger were observed over the lower part of the abdominal parietes. In some women the extremity does not return to its natural state for many months or years, or even during life. In the summer of 1831, a lady was placed under my care, for an affection of the left lower extremity, who, forty years before, had suffered from an attack of puerperal crural phlebitis in the same side. The left thigh and leg had remained larger and weaker than the other during the whole of this long period, and was liable to suffer severely from fatigue and slight changes in the atmosphere. In four cases of this affection, after the symptoms had begun to subside, the same appearances were observed in the iliac and femoral veins of the opposite extremity, and the other thigh, the leg, and the foot, became similarly affected. In two individuals only has the disease attacked the same extremities twice.

Puzos, as has already been stated, recommended repeated and copious venesection in cases of crural phlebitis; but, in all the cases which I have seen, there has been so much feebleness of pulse, and prostration of strength, that I have not ventured to draw blood from the arm. Many individuals attacked with crural phlebitis have already suffered from hemorrhage and uterine inflammation, and are not in a condition to lose much blood. But there are cases occasionally met with where the symptoms require, and are immediately relieved by, a general bleeding. An example of severe crural phlebitis after delivery occurred some years ago, in the practice of a medical friend, where the abstraction of twenty ounces of blood seemed at once to break the force of the attack. In a great proportion of cases venesection is not required, and the inflammation will be subdued by the repeated application of leeches above and below Poupart's ligament in the course of the crural veins. From two to three dozen of leeches should be applied immediately after the commencement of the disease, and the bleeding should be encouraged by warm fomentations and poultices. Should the relief of the local pain not be complete, it is requisite soon to reapply the leeches, in numbers proportioned to the severity of the attack, and to repeat them a third or even fourth time, at no very distant intervals, should the disease not yield. It is requisite, in the progress of the disease, not only to apply leeches along the course of the iliac and femoral, but of the saphena veins, or to any parts of the limb where the swelling is great and the pain very acute. Some patients experience greatest relief from the use of warm cataplasms to the limb, others derive most advantage from the application of cold, or a tepid evaporating lotion. The bowels are often much disordered in this disease, but the employment of strong cathartics is always injurious. Repeated small doses of calomel and antimonial powder, and Dover's powder, should be given, with some mild purgative, not only with the view of correcting the disordered state of the bowels, but to subdue the local inflammation and the great constitutional disturbance usually present. I believe no good is derived from mecury to salivation in this disease. It is of importance also to administer saline and diaphoretic medicines, and to procure rest and relief from pain, by anodynes, until the acute symptoms pass away. The diet should be the same as that usually allowed to patients who are labouring under inflammatory and febrile diseases. I have seen no advantage derived from the employment of digitalis in any stage either of uterine or crural phlebitis. Dr. Sims informed me that the swelling, pain, and tension of the limb, in a case of phlegmasia dolens, were strikingly relieved by puncturing the skin in different parts with a fine needle. In other cases this has done little or no good.

When the inflammatory symptoms have passed away, the limb remains in a weak œdematous state, and great uneasiness is often experienced from congestion of blood in the veins. Until the collateral branches which are to carry back the blood to the heart become enlarged, it is impossible by any means we possess to afford complete relief: the obstructed vein can never again be rendered pervious. Much benefit may, however, be derived, in this stage of the complaint, from the occasional application of leeches to different parts of the limb, and by preserving it in the horizontal position. I have seen much mischief produced by having recourse too early to remedies intended to promote the absorption of the fluid into the cellular membrane. Blisters, frictions, stimulant embrocations, and bandages to the limb, are only useful when the inflammation of the veins has wholly subsided, and other vessels have become so much enlarged as to carry on the circulation of the blood in the extremity without interruption. In the acute stage of the disease our main object is to moderate the inflammation of the iliac and femoral veins; and in the chronic form, to promote the circulation in the collateral veins by all the means in our power, and to further the absorption of the fluid effused. I have not perceived any sensible benefit accrue from the use of mercurial ointment and iodine in crural phlebitis. The repeated application of blisters is a much more powerful means of exciting the absorbents. The local abstraction of blood at the commencement of the disease is, you will perceive, by far the most important remedy.

LECTURE XLIV.

ON DISEASES OF THE BRAIN AND MAMMÆ IN PUERPERAL WOMEN.

Miliary fever, intestinal and remittent fever, ephemeral fever or weed, pneumonia, bronchocele, strangury, paralysis, diarrhœa, tympanitis, and various spasmodic and nervous disorders, have all been enumerated by systematic writers as peculiar to puerperal women; but as I have no observations of the slightest importance to make respecting these, I shall conclude this department of the course — the pathology of the puerperal state — with a few very general remarks on diseases of the brain and nervous system, and of the nipples and mammæ. From sympathy with the great uterine system of nerves after delivery, there is often a predisposition manifested to disease in the brain, and violent cerebral derangement is produced by causes which, at other times, would have had no effect. In the fifth vol. of the Transactions of the London College of Physicians, there is a Paper, by Dr. J. Clarke, on the Effects of Certain Articles of Food, especially of Oysters, after Child-birth, in which are related fatal cases which followed the use of oysters in the puerperal state; and the same effect has been produced by other articles of diet. Fourteen days after delivery, a lady was attacked with giddiness, then with violent pain of the head, neither of which yielded to the common remedies. The symptoms increased rapidly; she became senseless and delirious, and convulsions and death followed. Towards the close of the disease it was ascertained that she had eaten oysters on the day preceding the attack. A young, healthy, plethoric woman, three weeks after a natural labour, was attacked with pain of the head. A day before, she had eaten five or ten oysters, which had been dressed by boiling them in the liquor contained in the shells. Venesection, emetics, and purgatives, were employed, and the symptoms were mitigated for a time; but convulsions came on, and compression of the brain, and she died in no long time. Dr. J. Clarke has also related the case of another young healthy woman, who began a few days after delivery to complain of headache, and a sense of internal fulness in the head. These symptoms not having yielded to bleeding, purging, and low diet, a state of coma came on, and she died in sixteen hours. On the day preceding the attack she had eaten twelve raw oysters. On the third day after a natural labour, a woman, who was recovering in the most favourable manner, was suddenly attacked with a severe fit of cold shivering, followed by violent headache, throbbing of the temporal arteries; intolerance of light and sound, and other symptoms which indicated the existence of a dangerous affection of the brain. The pulse was 130; skin hot; tongue loaded. The abdomen was soft and puffy, and not affected by pressure. I ascertained that the attack was produced by the patient having eaten a quantity of ham twelve hours before. The symptoms were relieved by calomel and purgatives. Another woman, on the eighth day after a natural labour, was suddenly attacked with insensibility and convulsions. Twenty ounces of blood were taken away by cupping from the temples, and repeated doses of active cathartics were administered, and she recovered. A few hours before the attack she partook rather heartily of roasted chicken and salted tongue, with a friend who had come to visit her.

Inflammation of the brain and its membranes, in puerperal women, is not a disease of frequent occurrence. The symptoms are those of common phrenitis, not of insanity. There is headache, flushing of the face, throbbing of the arteries, intolerance of light and sound, delirium. General and local bloodletting, and active purgatives, should be had recourse to as soon as possible, and all the other remedies usually employed in inflammation of the brain: the patient should be kept in a dark room, and ice in a bladder applied over the shaven scalp. Puerperal mania is a much more common disease than inflammation of the brain, and the symptoms and treatment do not essentially differ from mania as it occurs in women who have not been pregnant, or even in the male sex. Without knowing the history of the patient, it would be impossible in any case to ascertain, from the phenomena alone, whether the disease had followed delivery. In puerperal women it assumes all the varied forms of ordinary insanity, occurring sometimes with symptoms of deep depression or melancholy, and at other times with symptoms of great excitement — talking incessantly and vehemently, pouring forth a torrent of words, and running from one subject to another without the least order in their ideas. In some cases the disease first manifests itself by want of sleep and restless nights, and a peculiar irritability of temper, the temper being ruffled at the merest trifles. Often it is first marked by some unreasonable dislike to the nurse, and she is accused unjustly of carelessness and inattention, or the husband is charged with infidelity, or some other crime. In some cases the aberration of mind is preceded by headache and other symptoms of cerebral irritation, quick pulse, and hot skin; while in others there is little derangement of the bodily functions, the circulation being almost natural, the skin cool, and the digestive organs very slightly disordered. Sometimes puerperal insanity is preceded by an attack of violent uterine irritation; there is pain of the hypogastrium, increased by pressure, and some other symptoms of uterine inflammation, which have speedily disappeared on the supervention of the mental disorder. In the greater number of cases puerperal mania occurs after natural labours, and has not been preceded by peculiar derangement of the digestive organs during pregnancy, or uterine hemorrhage during labour.

There is an hereditary predisposition to the disease in a considerable number of those who become affected, and some have suffered from it repeatedly in the puerperal state. The disease is attended with much greater danger when it occurs soon after delivery, with symptoms of violent excitement of the brain, than when it commences several months after, during suckling, in the form of melancholy madness. Dr. Burrows published a table of fifty-seven cases, of which ten died. Of ninety-two patients at the Salpetrière, six died, or one in fifteen. Of these ninety-two cases recorded by M. Esquirol, sixteen occurred from the first to the fourth day after delivery; twenty-one from the fifth to the fifteenth day; seventeen from the sixteenth to the sixtieth day; nineteen from the sixtieth day to the twelfth month of suckling; and in nineteen cases it appeared after voluntary or forced weaning. M. Esquirol infers that puerperal mania occurs more frequently as the consequence of delivery than of nursing, and that the more distant the time at which it occurs from the period of delivery, the less it is to be feared. Of these ninety-two cases, eight were idiotical; thirty-five melancholic; and forty-nine maniacal. The ages of these numbers were as follows:—Twenty-two from 20 to 35 years of age; forty-one from 25 to 30; and 12 were upwards of 40: therefore, neither delivery nor suckling, according to this statement, modify derangement as far as age is concerned, for in this disease, produced by other circumstances, it most frequently occurs between the ages of 30 and 35. Sixty-three of the cases related by M. Esquirol were married women; twenty-nine single. Fifty-six out of the ninety-two were entirely restored to health; thirty-eight of these recovered in the first six months. The appearances on dissection, it is stated, threw no light on the nature of the disease. These ninety-two cases of puerperal mania were treated by mild purgatives, frequently repeated, by blisters to the nape of the neck and limbs, enemata, and baths: bleeding was seldom indicated. In the treatment of puerperal mania the greatest attention should be paid to the state of the brain and of the digestive organs. If the countenance is flushed, the carotid and temporal arteries throbbing violently, the head should be shaved, and blood drawn by leeches from the temples. When there is strong general excitement of the circulation, combined with these symptoms of local determination to the brain, blood should be drawn from the arm in quantity proportioned to the severity of the symptoms. In ordinary mania, decided benefit is sometimes produced by moderate general depletion, and after this great advantage follows the application of ice, in a bladder, to the scalp, or a cold evaporating lotion. Light and noise should be carefully excluded, and a nurse accustomed to the charge of insane persons should have the care of the person. It must be a mild, but vigilant and firm control, which is exercised, and especial care taken that patients, who are sometimes violent and vindictive, inflict no injury upon themselves or those around them. The windows should be secured, and all sharp and cutting instruments should be put out of their way. Women are not unfrequently, at the commencement of the disease at least, fully aware of the disordered state of their minds; they feel that they have not their wonted power over trains of thought passing through their minds, and their ideas succeed one another with extraordinary rapidity, and in a manner different from what they did in a state of health. The condition of the mind during sleep or dreaming is also peculiar. Often, when the disease is forming, the ideas have all a relation to the process of delivery. A lady now afflicted with puerperal mania was delivered unexpectedly at the end of the sixth month of pregnancy, when sitting up — the child literally dropped from her, and had nearly fallen upon the floor; she cannot now, though several months have elapsed, be persuaded that the same accident is not about to take place, and keeps her hands nearly all day long in a position to prevent it. The mother of this lady had one or more attacks of puerperal mania, and the disease was obviously hereditary. A disordered state of the digestive organs is not unfrequently a concomitant of puerperal insanity, and in a few cases this has appeared to be the exciting cause of the complaint, for relief has almost immediately followed the action of brisk cathartics. Whether we view deranged states of the digestive organs as causes or consequences of puerperal mania, these should be effectually removed by repeated doses of calomel and purgatives, and the condition of the alvine evacuations frequently ascertained. Bleeding, general or local, is not required in the greater number of cases of puerperal mania, and the frequent and long-continued use of active cathartics is injurious, especially when the disease is accompanied with symptoms of general debility and exhaustion. More benefit is then derived from narcotics, especially acetate of morphia, nourishing diet, and gentle exercise in the open air. Benefit has also been obtained, in some cases, after the acute stage of the disease has passed away, and convalescence has commenced, by allowing the patient occasionally to communicate with her relatives, from whom she had been separated.

The affections of the nipples and mammæ during suckling, though attended with little danger, often produce the greatest suffering. When the breasts have become suddenly distended after a first labour, and where the child has not been applied sufficiently early, constitutional disturbance of great severity sometimes takes place. There is a rigor, succeeded by intense heat of skin, quick pulse, oppression of breathing, headache, flushed face, and sometimes slight incoherence or delirium. The tongue becomes dry, and there is urgent thirst. However violent the symptoms of milk fever may be, little danger is to be apprehended; none, in comparison with uterine inflammation or puerperal fever, which ought not to be confounded in any way with milk fever. If the breasts are hard and distended on the third or fourth days after delivery, and there is no pain increased by pressure in any part of the hypogastrium, however severe the febrile disturbance may be, there is comparatively little risk, and the symptoms will gradually subside if the proper treatment is adopted. Active saline cathartics ought to be liberally administered, and diaphoretics at short intervals, and the over-distension of the breasts should be relieved by warm fomentations or frictions, and having the milk drawn off. The exhausting syringe, or glass tube and ball, are often employed for this purpose, but the safest and most efficacious method is to procure a child a few months old, and apply it to the breasts. Bloodletting is rarely necessary in milk fever, and it is better to relieve the determination of blood to the head, where it is great, by leeches to the temples, and a cold evaporating lotion. The early application of the child to the breasts, warm fomentations, and poultices, or occasional friction with oil or camphorated liniment, and the exhibition of cathartics and diaphoretics, and low diet, are the best means of preventing attacks of milk fever; where women are not to suckle their children, the secretion of milk should be lessened by the exhibition of saline purgatives soon after delivery, and the sparing use of liquids. The breasts may be covered with fine linen rag, moistened with the following, or some similar, tepid lotion. Camphor. ʒj. ; Spirit. Vin. Rectif. ℥jss. ; Aquæ, ℥viii. Nurses sometimes cover the breasts with diachylon plasters, and the pressure probably acts by arresting the secretion. Sometimes, however, this is done very imperfectly, and the breasts are very large and distended, and painful for two or three days, and then the secretion begins to diminish. The application of warm fomentations and emollient poultices are upon the whole better applications; they are more soothing. They allow a small portion of milk to flow from the nipples, and the milk soon recedes, with low diet and cathartics. If the distension is very great and painful, and there is much constitutional disturbance in spite of all this, it is best to relieve the breasts by drawing off a portion of the milk.

Ulceration of the nipples occurs either as a simple superficial excoriation, or as a deep crack. Some women suffer so severely after every confinement from excoriation and ulceration of the nipples, that they are altogether unable to suckle their children, however anxious to do so. No sooner does the child begin to suck, than the skin covering the nipple gives way, and if the suckling is continued, large, foul, painful, superficial ulcers, or deep cracks, take place, which bleed every time the child is applied. The pressure of the child's gums prevents the ulcers from healing, the edges of the sores are drawn asunder every time the child is applied, and they are thus prevented from healing. To obviate the effect of this mechanical irritation, shields and prepared teats are employed, but children often refuse to suck with these, and they are obliged to be put aside. If one nipple is excoriated, and the other is not, the child should be more frequently applied to the sound than to the sore nipples. The excoriation and ulcerations of the nipples would all cicatrize, if it were possible to leave them sufficiently long in a state of rest. A great number of different applications have been recommended in these cases; but I am unable to explain to you precisely the principle upon which they act. The good they do is probably chiefly effected by allaying the excitement of the parts, or by acting as gentle stimulants and astringents, as similar applications act upon common ulcers in other parts of the body. The following are some of the applications in common use: — v Sodæ Sub. Borat. ʒj., Aquæ distill. ℥iijss., Spirit. Vin. Rectif. ℥ss. M.; or Alum. Sulph. gr. iij., Aquæ, ʒj. M.; or Zinc. Sulph. gr. xv., Aquæ Rosas, ℥iv. An ointment now extensively used, and with great advantage, consists of ʒj. of the Balsam of Peru, to ʒvj. of Unguent. Cetacei. Sometimes the Unguent. Hydr. Nitr. Oxid., mixed with a small proportion of opium, answers very well, or ointment of bismuth, or zinc ointment, or simple cerate. Some sprinkle a little gum arabic over the nipple. Where there is a granulating surface, looking like a raspberry, a solution of lunar caustic, two grains to the ounce of water, applied with a camel's hair brush, answers very well. Another method of applying the lunar caustic is to touch the nipple, after carefully drying it, with a sharp pencil of nitrate of silver, and afterwards covering it with a little simple ointment. I have seen all these applications, and many others, tried without success, and the ulcerations have at last healed up under the use of a bread-and-water or linseed-meal poultice, spermaceti ointment, or the most simple unctuous application. Not unfrequently ulceration of the nipples gets well, where the applications have not produced the effect, — the last, however employed, generally receives all the credit for the salutary change.

Inflammation of the mammæ often occurs spontaneously, and cannot be referred to an ulcerated condition of the nipples, exposure to cold, external injury, improper diet, mental excitement, or any other adequate reason. It may take place during the whole period of suckling — three, six, or even twelve months, after delivery, and it has sometimes occurred after weaning. Most frequently, however, inflammation of the mammæ takes place within a month after delivery; sometimes it occurs before the end of the second week. A hard lump is often at first felt in the breast, which is painful on pressure, without any redness of the integuments covering it; but as the inflammation extends, the integuments assume an uniform redness, and this is more or less diffused according to the extent of the part affected. Rigors, quick pulse, headache, thirst, and other symptoms of constitutional disturbance, usually accompany the affection; but these vary very much in severity in different cases. Where the inflammation is in the cellular substance under the skin, or in a superficial portion of the gland, suppuration soon takes place, and the pus is often discharged through an opening in the skin near the root of the nipple. In other cases a large portion of the gland is inflamed, and the matter makes its way very slowly to the surface. Different modes of practice have been adopted in this disease. I believe it to be unnecessary here to abstract blood from the arm; and in a large proportion of cases warm applications are more useful than cold evaporating lotions. When there is much pain, tension, and hardness of the breast, apply twelve or eighteen leeches to the affected part, and foment the bites till a sufficient quantity of blood has been procured. Then a warm linseed-meal poultice should be laid over the part, which should be renewed every four or six hours. The bowels should be very freely opened by calomel, antimony, and some saline cathartic, as senna and salts, and afterwards the febrile symptoms allayed by saline diaphoretics, and rest procured by anodynes. If the inflammation is severe, it is often necessary to reapply the leeches a second or third time, and the poultices and fomentations should be continued, or warmth applied by means of these wooden bowls, till resolution or suppuration takes place; and when pus is formed, it is in general the best practice to allow the matter to make its way to the surface, and be discharged by ulcerative absorption of the parts intervening between the surface and the cavity of the abscess. The circumstance which ought to guide us in opening mammary abscesses have thus been clearly stated by Sir A. Cooper: — "If the abscess be quick in its progress, if it be placed on the anterior surface of the breasts, and if the sufferings which it occasions are not excessively severe, it is best to leave them to their natural course, rather than to employ the lancet for the discharge of the matter. But if, on the contrary, the abscess in its commencement be very deeply placed; if its progress be tedious; if the local sufferings be excessively severe; if there be a high degree of irritative fever, and the patient suffer from profuse perspiration and want of rest, much time is saved, and a great diminution of suffering produced, by discharging the matter with a lancet. Still, it is wrong, to penetrate with the lancet through a thick covering of the abscess, as the opening does not succeed in establishing a free discharge of matter, for the aperture closes by adhesion, the accumulation of matter proceeds, and ulceration will still continue. On this account the opening should be made where the matter is most superficial, and the fluctuation is distinct; and it should be in size proportioned to its depth. "Several abscesses," adds Sir Astley Cooper, "sometimes form in the same breasts, quickly succeeding each other, and lead to very protracted sufferings. In these cases opium and quinine will be required to lessen irritability, and support the strength of the system. Sometimes an abscess is produced at a great depth in the breast, and discharges itself by several different apertures, forming sinuses of various extent. The best mode of treatment in these cases, as far as I have had an opportunity of observing, is to inject them with a solution of two or three drops of the strong sulphuric acid to an ounce of rose water, and to apply the same solution by folds of linen cloth over the bosom, by which the secretion of milk is checked, and adhesion is produced."

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